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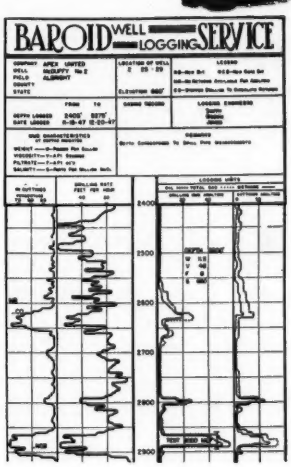

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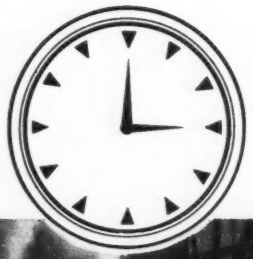

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November 30th, 1949
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Washington Highlights

The Power Commission has authorized the Pacific Gas and Electric Company of San Francisco to build and operate a hydro-electric development in Central California. Location of the project would be on Helms Creek and the north fork and main channel tof Kings River.

Hugh A. Stewart has been appointed new director of the Interior Department's Oil and Gas Division. He succeeds to the post formerly held by Max W. Ball, who resigned December last. During the past several months, Carol D. Fentress, OGD refining director, has been acting director of the division.

The Commerce Department has approved export of 40,000 barrels of aviation gasoline to Yugoslavia in a more to strengthen Marshal Tito's air force.

A method developed by the U. S. Bureau of Mines for exact determination of the porosity of oil and gas-bearing sands in a matter of minutes is described in an official report just released. Information on the pores or openings in reservoir rocks is important in the scientific recovery of petroleum. The method was developed at the bureau's petroleum experiment station at Bartlesville, Okla. It was part of the bureau's research on fluid-energy relationships and on methods of improving the recovery of crude oil from underground reservoirs. A single copy of Report on Investigations 4548, "A Bureau of Mines Method for Determining Porosity; A List of Porosities of Oil Sands," by Cleo Griffith Rall, assistant chemist, and D. B. Taliaferro, principal petroleum engineer, Bartlesville petroleum experiment station, may be obtained only upon written application to the Bureau of Mines, publication distribution section, 4800 Forbes street, Pittsburg 13, Pa.

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Walter S. Hallanan, chairman of the National Petroleum Council, has announced the appointment of the committee on Liquefied Petroleum Gas. The appointment of the committee was in response to a request by the Department of Interior for a study on the present liquefied petroleum gas situation, including the production and transportation of liquefied petroleum gas. The committee's study will be submitted to the council with such recommendations as may be deemed appropriate.

Citing that the effect would be beneficial both to Europe and this country, Senator Bricker, Republican of Ohio, urged more than $1,000,000,000 cut in Marshall plan spending in 1950. He said at a news conference such a cut would aid European nations by spurring them to erase barriers to trade among themselves and help the United States in breaking away from red-ink financing.

Senator William F. Knowland, Republican of California, is on a month's tour of Asia. He is reported to have said in Tokyo that he wanted to make fact-finding visits to Korea, Okinawa, Formosa, China and the Philippines.

U. S. imports rose $39,900,000 in September, the month which produced a devaluation of foreign currencies designed to hike foreign sales to this country, according to the Census Bureau. U. S. exports to other countries increased $23,600,000 in September.

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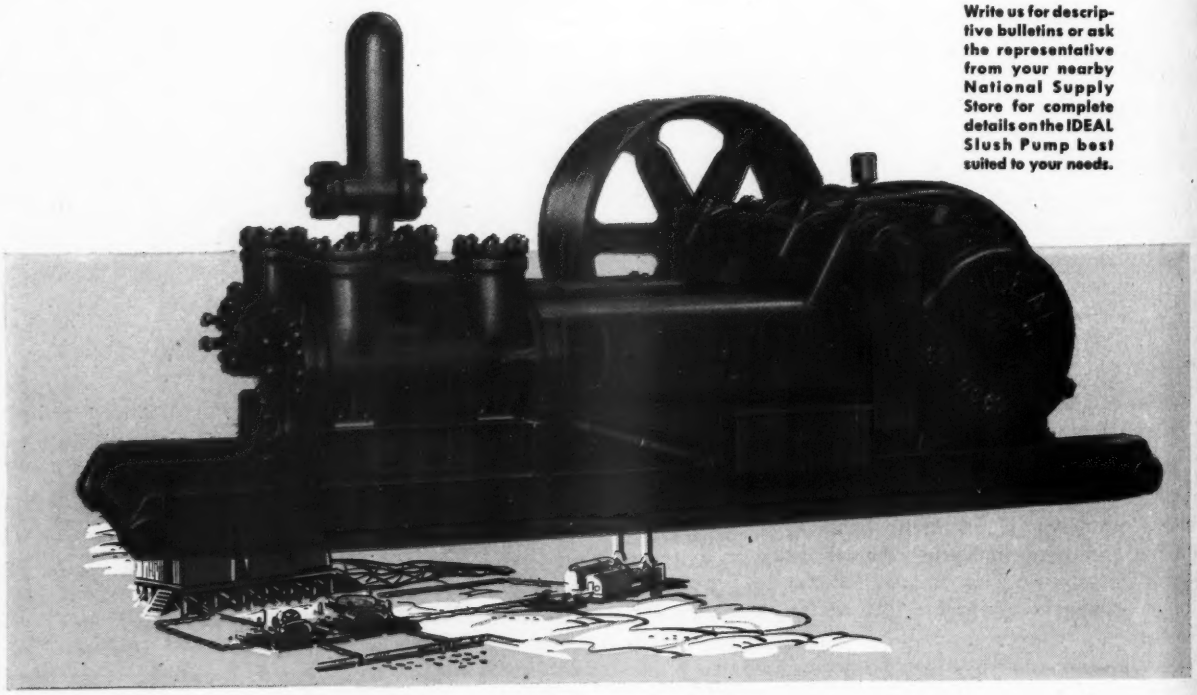

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The History of Drilling Technology And Its Prospects

J. V. Pennington
Drilling Research, Inc, Houston, Texas

ABSTRACT

A history is presented of the invention of hole-making methods and equipment from antiquity down to the present time. As a possible guide toward further development, some normative conclusions are drawn.

An analysis of the known art is given, and the directions are indicated toward which research might look for new and more economical methods of drilling. The central problem is thought to be transmission of energy to the bottom of the hole.

INTRODUCTION

Fifteen years ago the world's record well was 11,377 feet deep. A few months ago a depth of 20,521 feet was reached. Obviously, in the intervening years there have been many notable improvements in methods and means for sinking deep holes, but these improvements have all been directly concerned with hydraulic rotary drilling. The question remains as to whether some radically different method of sinking deep holes can be found which will ultimately result in substantial savings to the industry.

A research program with this as its objective was inaugurated early this year. The first phase, completed in June, consisted of a broad search of the text, and of this periodical and patent literature, both domestic and foreign. A large number of arts and sciences in addition to earth boring were ransacked including: mining, quarrying, tunneling, stone working, abrading, machine tools, solid-material comminution, chemical reactions, atomic energy, jet propulsion, petrology, and earth physics. The primary purpose of this investigation was to discover all the methods that had ever been suggested for sinking holes in the earth and for disintegrating rock. A general classification of the material uncovered appears hereinafter, but the intent of this paper is to present one of the byproducts, viz., a historical summary of the evolution of earth-boring methods and equipment, with some conclusions drawn therefrom that might prove useful in the further development of that history.

The events fall conveniently into four periods: 1, from antiquity down to the beginning of the industrial era (circa 1800); 2, to the drilling of the Drake well; 3, to the discovery of Spindletop; and, 4, to the present time.

HISTORY

Hole Making in Antiquity

Even in prehuman ages, holes were dug in the earth and rock was disintegrated. Animals made holes and long tunnels by processes of abrasion and side-wall impaction. Nature disintegrated rock by the use of heat, cold, alternate heat and cold, frost wedging, leaching, solution, chemical reaction, oxidation, explosion, erosion, shear, and compression. Prehistoric man, therefore, arrived on the scene with plenty of things to think about, but with no petroleum engineers to think about them. He dug holes for water and for lodging with his bare hands. Over the course of perhaps a hundred thousand years he developed hand tools—successively of wood, stone, and bronze—indispensable survivals of which are seen today in the spade, trowel, punch, chisel, and pick. Inasmuch as time and labor were in plentiful supply, many more thousands of years passed before man contrived to interpose a mechanism between his manual power input and the cutting tool. Rotary drilling appeared first. It took the form of a bow which operated a spindle tipped with bone and spun on rock with a flux of sand and water. This is essentially the modern chilled-shot or adamantine process in miniature. It is thought that the employment of this process with lost circulation caused the accidental discovery of fire making by friction.

The churn-drilling process appeared later. It seems to have originated in China during the classical age of the Chou dynasty (1122-256 B.C.). Ancient Chinese writings tell of many wells, hundreds of feet deep, drilled near the border of Tibet for gas and for water and brine, by what is known as the spring-pole method. This method was still standard practice in Drake's time. A 40-ft. green sapling rested on a fulcrum at an angle of 30 degrees, with the butt end firmly anchored to the ground and the tools suspended near the other end. Various means were devised at the slim end to permit the sudden and periodic application of the weight of one or more men to cause the tools to drop. The well was cased with bamboo, and the tools at first were of bronze. Later the Chinese made tools of iron, and drilled 6-in. brine wells more than 1,500 feet deep at a rate of 2 feet per day. Larger shafts were cribbed with timber or curbed with stone.

The Burmese were the greatest producers of oil before the exploitation of the Pennsylvania fields. They dug by hand to the hard rock; and, in one primitive variety of the percussive process, they suspended a heavy weight on a cord, which was then cut—thus allowing the weight to fall on the rock. A man climbed down and attached another rope by which the weight was pulled to the surface. This seems to be the precursor of the Chinese method. It should be mentioned that, at some time early in our era, the Japanese drilled to a depth of 900 feet for the express purpose of obtaining oil.

In this country wells of great antiquity were dug by hand and shored with timber in the Oil Creek area of Pennsylvania by a mysterious race of aboriginals which is also credited with having worked the ancient copper mines near Lake Superior. In later years many hand-dug wells were curbed with stone or brick, as in China; and this marked the farthest advance of well-digging technology in the New World until the end of the 18th century.

From 1800 to 1859

Apparently the Chinese or spring-

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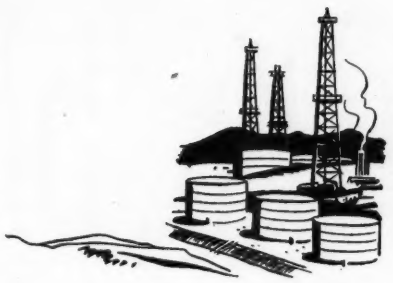
pole method was introduced into the western world by the Ruffner brothers about 1806. Wells were said to be "jigged" or "kicked"down, depending on the performance required of the operator in throwing his weight on the pole. The first oil-country patent revealed by the search is date 1828, and it shows an improved spring-pole rig wherein the rig is unitized for portability and the tools can be manipulated by foot from a sitting position. It is often stated that Drake's great contribution to the drilling art was the introduction of iron casing, but an interesting patent granted to Disbrow in 1830 describes his use, near Syracuse, N. Y., of iron casing and a means for snubbing it in, as well as of square drill rods, hard- and soft-formation bits, and fishing tools. The only remaining patent in this period of any significance is one granted to Stickney in 1853. Its primary object is the enlargement of the lower end of blast holes; and this Stickney does by several means: 1, by the introduction of acid or other chemical agent; 2, by the combustion of charcoal in a stream of oxygen; and, 3, by the combustion of hydrogen and oxygen issuing through nozzles in a deep-hole torch.

Many other improvements were made, but not patented. Steam power was used as early as 1829 by a drilling contractor in Kentucky. In one well, it is reported, he lost his tools in a crevice at 180 feet; that oil gushed to a height of 30 feet, and that this oil caught fire from the forge and boilers. Many wells in this period produced oil, to the great disgust of the drillers. It was mainly to shut off oil from otherwise valuable brine wells that the Ruffners invented the "seed-bag" packer. A number of these wells exceeded a depth of 500 feet. Fauvelle, in 1845, is credited with the first use of water circulation; and, prior to 1857, Bowles employed the "self-cleaning" method whereby water and cuttings were jiggled up through hollow drill rods equipped with check valves, apparently the first instance of reverse circulation.

In 1859 Drake drilled the first well in this country for the express purpose of striking oil. Up to that time



oil had been obtained by ditching and draining seepages from hand-dug oil pits and by the incidental production of oil from improperly completed brine wells. Although possibly of some sentimental value, the Drake well is of no importance technologically. Little use was made of the improvements of 40 years; the Chinese could easily have equaled his 70 feet in 70 days, more than half of it soft digging. But an intensely active period of invention and development was ushered in by the birth of the new industry.

From 1859 to 1901

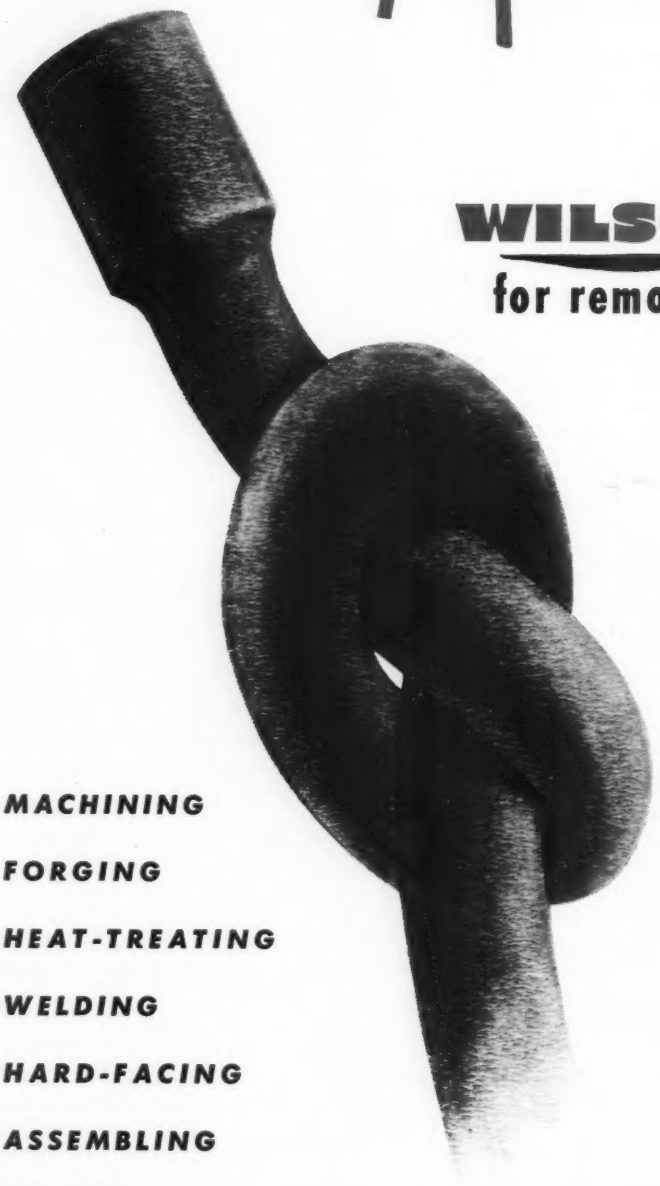
The oil-well drilling practices developed during the period 1859 to 1901 are substantially those used today. But the converse is not true. Many methods and devices were invented which are not found in present practice, although some are just now beginning to receive serious attention and systematic investigation.

The spring pole gave away to the walking beam, and steam power took the place of manual effort. Various types of spudders made their appearance. Churn drilling developed along several related lines known as the standard, portable, pole-tool or Canadian, self-cleaning, and California or stove-pipe systems; and for the past 80 years, the most amazing years in the history of science and engineering, human ingenuity has contrived only to make these tools bigger and heavier.

But while development of percussion drilling as embodied in the churn-drilling system was coming to a standstill, the ingenuity of operators was being turned to other and more interesting channels. During this time rotary drilling was common practice in the wood-working and metal-working industries. It might seem that the idea soon would have been adapted to earth boring. But the conditions in the Pennsylvania fields were (and are) such that no rotary method was conceived that could compete in cost with the churn-drilling system. The center of interest had to move to other parts of the country and of the world for this sort of development to demand consideration. Actually it was a French civil engineer, Leschot, who in 1863 first used a diamond-studded bit and true rotary drilling—although there is a prototype in the hand-operated earth auger used in soft formation. A patent granted to Summers in 1869 covers a combination rig with rotary table, bevel-gear drive, kelly, and kelly bushing. No provision was made for circulation of "wash-out" water, although the principle was already in use in churn drilling. The omission was remedied before 1873; for at that time Cross filed his own invention of a diamond drill. This drill not only was supplied with circulation, but it even was driven by a bottom-hole turbine. This was first of quite a number of patents employing the turbine principle. Cross's objective was to eliminate the breakage of drill rods when holes reached a depth of 300 feet, and he contemplated the use of 100-psi pressure and the development of 10 hp for a 4-in. bit. In 1884 the Bakers patented a refinement of the turbine principle, and gave as their objective the drilling of a straighter hole.

The cost of diamonds (carbons) in 1873 was only $8.00 to $12.00 per carat, but they soon became more expensive. Various substitutes were tried; corundum, chopped steel, garnet and steel filings fed down the bore hole. The steel filings were superseded by chilled-steel shot, a method very profitably employed today in the sinking of large-diameter shafts. The effort to eliminate diamonds also led to the Calyx drill, a drag core bit consisting of a hardened tool-steel crown cutter. The roller-cutter rock bit was first developed in the stone-cutting industry. A patent granted to Jenkins in 1878 shows a 2-cutter or simplex bit, whereas a later patent to Catlin shows a bit with two side cutters and two cross rollers. The complete conception of the hydraulic rotary system employed today ap-

knotty problem?



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pears in U.S. Patent 443,069, filed by Chapman in 1887. His most significant contribution consists of the use of an artificially compounded mud to wall up the hole. He suggests the use of clay, gumbo, bran, rice, grain, cement, or other plastic and adhesive material.

In this period air hammers were developed for shallow, hard drilling. Johnson, in 1867, devised a method of disintegrating rock by the alternate use of heat and cold. Wireline coring was developed by Bullock for the churn drill.

In particular, the attention of inventors in America was turned to the use of bottom-hole electric-motor drives, and of those in Europe to bottom-hole hydraulic-motor drives. In 1889 Webber invented an electric-motor geared-drive percussion tool, and in 1890 Gardner filed on a bottom-hole electric-motor-driven rotary coring tool and circulating pump provided with an upper cup to receive the cuttings. An electric solenoid-operated percussion tool was invented in 1903.

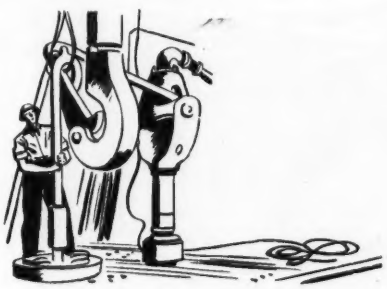
Mud- or water-driven bottom-hole hydraulic percussion tools seem to have originated with Bushman in Germany in 1887. He employed an oscillating fluid column to actuate a responsive bottom-hole piston with return spring. Continuous pump pressure operates the devices of Howarth and Pruszowski which were invented in 1899, and those of Wolski in 1900. In the former the hammer is raised against a spring, and in the latter it is urged downwardly against a spring.

Passing mention should be made of the development in this period of several methods of soft-formation digging, such as hydraulic jetting, driving, and punching, as well as of instrumentation and casing practices.

In 1901, by virtue of its spectacular success at Spindletop, hydraulic rotary drilling was established as a standard practice in the industry. But again, just as the art of drilling was about to overtake the existing technology, new ideas were in the making which have not as yet been realized in practice.

From 1901 to the Present

The period from 1901 to the present is well known and well documented; therefore, little space will be devoted to it. The main objection to the new method of hydraulic rotary drilling was its relatively high cost. Isaiah Bowman, writing in 1911, illustrates the point by the fact that on a Beaumont location the cost of derrick, boilers, pumps, and machinery jumped to the sickening figure of $3,800, and that a 900-foot well cost $4.00 per foot to complete, including casing. The drilling time for this well was 60 days; but, in 1906, a 750-foot well was completed and put on production in the Powell Field, Texas, in 36 hours.

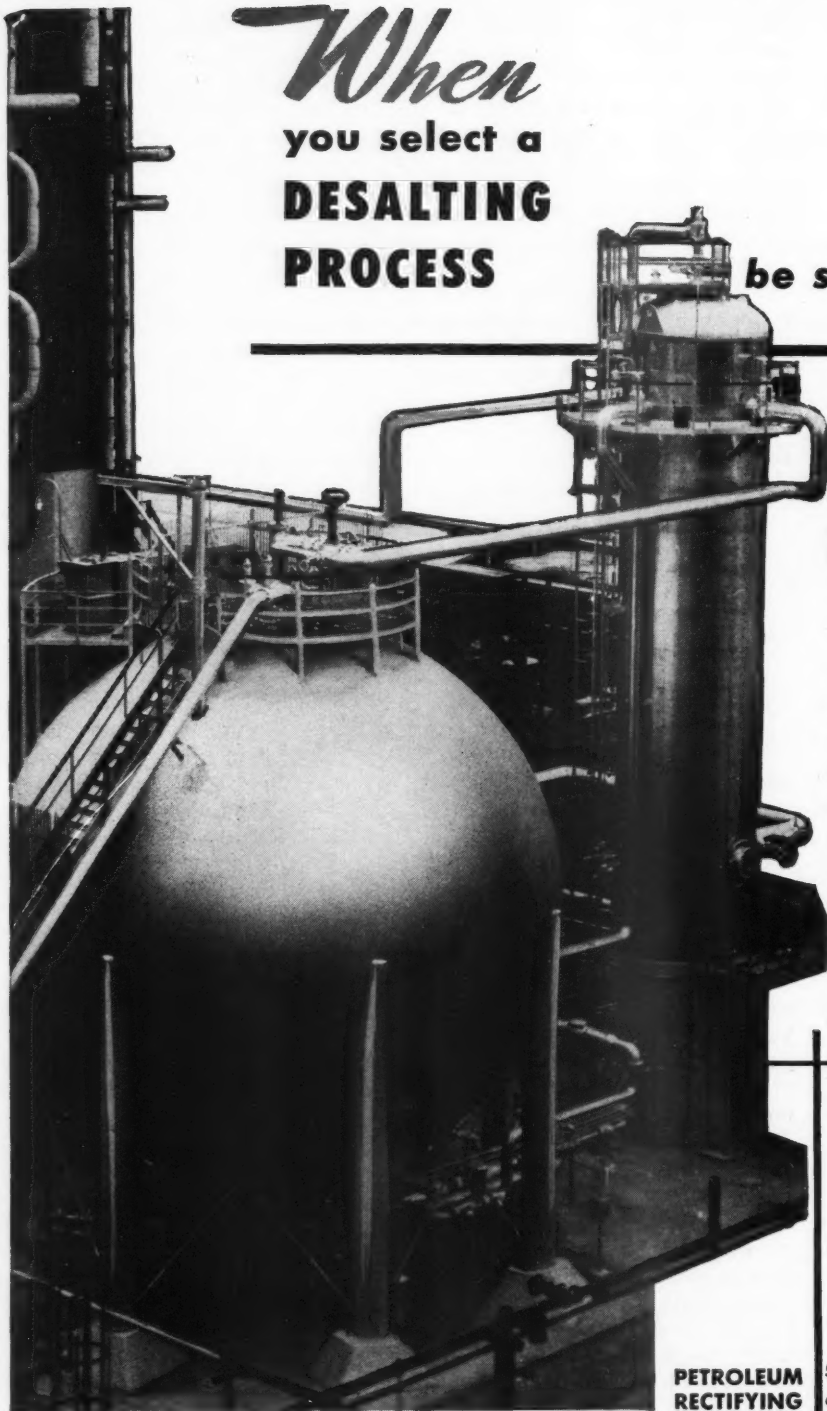


Since that time rotary equipment has been made bigger, better, and heavier; and drilling has gone deeper and faster. Improvements in power supply have been conspicuous, and all manner of means have been devised for giving the driller and the geologist more information.

With respect to new developments in hole-making techniques, Avery invented a bottom-hole hydraulic rotary motor-driven tool in 1901, and Bannister an oscillating mud motor in 1930. An abrasive jet was patented in Switzerland for deep-hole boring, and shaped charges were tried experimentally in this country. Hand tools for many and varied surface operations were invented, and these employ vibrations in the sonic and ultrasonic range of frequencies. A technique for the drilling of fine holes in diamonds by means of the electric arc was the subject of many patents; and Aarts in Holland invented a deep-hole electric-arc technique in 1930, although it is of doubtful value in its present form. Rocket principles have been used to dig shallow holes in hard rock. This procedure, however, is not as stated in a recent newspaper article, in which the rocket is pictured as being pointed toward China. On the contrary, the rocket is placed in its normal vertical position, but is restrained against motion—the heat and kinetic energy of the blast being utilized for disintegration of the rock. The possible use of atomic energy for making hole has been mentioned in the press, and even in the oil journals. At the present time, as far as is publicly known, there is no such thing as a small controlled atomic explosion. It is a question of Bikini or nothing. Presumably, therefore, the atomic energy would have to be used as a source of heat. This would require the use of a reactor, which Mr. Lilienthal estimates to cost $50,000,000. Other serious drawbacks involve the cost and availability of fissionable material as well as health hazards. Proper precautions for the protection of personnel are rendered difficult by the requirement of portability. It appears, therefore, that new and fundamental scientific discoveries must be made before serious consideration can be given to atomic energy as an economical agency for deep-well boring.

CRITIQUE

One thing which immediately strikes the reader of the foregoing history is the lag of 30 to 40 years between the invention or initial development of a method or apparatus and its adoption in practice. It would be a mistake to attribute this to hard-headedness or inertia. The governing factor has, in every case, been cold economic evaluation. The final adoption of an old idea is usually brought about by one or more of three things, viz.: increased demand (as in the Drake well), new field conditions (as at Spindletop), and economic pressure. It may fairly be said that all three of these conditions confront the industry today. It is to be expected, therefore, that the lag will tend to disappear, and that commercial applications will be found in practice prior even to the issuing of the corresponding patents. A further result of this will be that, whereas in the past there has always been an untapped reserve of invention and semi-developed ideas to be drawn on under critical conditions, there will no



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longer be such a reserve—unless a systematic program of invention and development is undertaken by the oil-well drilling industry.

In the period reviewed hereinbefore, invention was regarded, in a rather mystical light, as a visitation of mysterious powers on an exceptionally inspired individual. Today invention is regarded as a science, with its own procedures and disciplines. In many industries, such as that of organic chemicals, there are people whose job it is to invent, without the distraction of operating problems. These are industries in which the lag between invention and application has long since dwindled to zero. That phase of oil-well drilling history seems to have arrived, and with it there are already some signs of the adoption of a more realistic attitude toward invention and development—with programmed activity taking the place of dependence on the inspired individual.

Another noteworthy feature of this history is the fact that improvements have come, for the most part, from the belated application of technology borrowed from other industries. It should, therefore, be possible to accelerate this process by a systematic program wherein qualified men would be brought from many and various industries to spend a few weeks in the field and to offer suggestions whereby their specialized technology might be combined with that of the oil country. The Froude water brake, for example, was invented in 1870, and its principle was applied to drawworks in 1930. It was widely used in other industries prior to 1920, and it also would have been a distinct asset to the drilling industry.

Still other inventions have been the natural consequence of conspicuous developments in other fields: the turbine, the electric motor, the electric arc, the strain gage, the shaped charge, etc. Usually these have been adopted enthusiastically and exploited diligently, even if not always systematically.

ANALYSIS OF METHOD

Of the many possible ways of breaking down and classifying the known methods and means, the following seemed most useful for our present purpose:

1. Type of energy supplied at the top of the hole.
2. Means for transmitting the energy to the bottom of the hole.
3. Means for converting the energy from one form to another.
4. Means of applying the converted energy to the rock.
5. Incidental ideas.

1. Input Energy

Absence of space limitations at the surface permits, in principle, the use of primary energy in any form. Practical limitations include cost and portability. Several conversions of the energy may be made in well-known ways on the ground, but the energy enters the hole in one or more of the following forms:

a. Mechanical energy:
   - Reciprocating member.
   - Rotating member.
   - Oscillating rotary member.
   - Dead load.

b. Hydraulic energy:
   - Fluid flow—continuous pressure.
   - Fluid flow—modulated pressure.
   - Hydrostatic pressure.
   - Suction.

c. Thermal energy:
   - High-temperature medium.
   - Low-temperature medium.

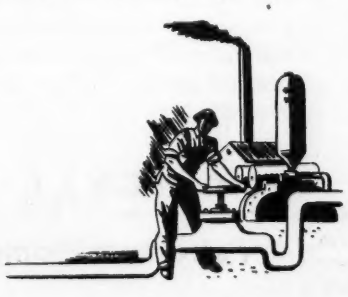
d. Chemical energy:
   - Mutually reactive agents.
   - Rock reactive agent.
   - Fuel.
   - Explosive.

e. Electrical energy:
   - Direct current.
   - Alternating current.

Each category is to be considered in its widest possible range. For example, "reciprocating member" includes use of frequencies from subsonic to ultrasonic.

The ideas hereinbefore referred to as incidental will be mentioned under the primary headings to which they are most closely related. Those associated with input energy are:

a. packaged vs. continuous input of energy.
b. Combinations.



2. Down-Hole Transmission.

This is the central problem of deep-hole drilling. It is also the one to which more good hard work along straight lines of development has been applied, but in which less inventiveness has been apparent than in any of the others. Given an economical and ample supply of any of the various forms of energy at the bottom of the hole, the design of effective devices for its utilization would require more good sound engineering than inspired invention. Given, for example, a 3-in. inside-diameter flexible hose with sufficient bursting and tensile strength, containing insulated electric-power conductors, the drilling art would promptly be enriched by the addition of at least three effective techniques.

The main headings are:

a. Mechanical transmission:
   - Moving rigid member.
   - Continuous belt.

b. Hydraulic transmission:
   - Rigid hose.
   - Flexible hose.

c. Thermal energy transport.
d. Chemical energy transport.
e. Electrical transmission.

3. Energy Conversion

This part of the classification includes all possible permutations of the classes and sub-classes of energy given hereinbefore. It also includes provision for two or more energy conversions and the means for effecting the conversions. The list is easily compiled but lengthy and, therefore, has been omitted for brevity.

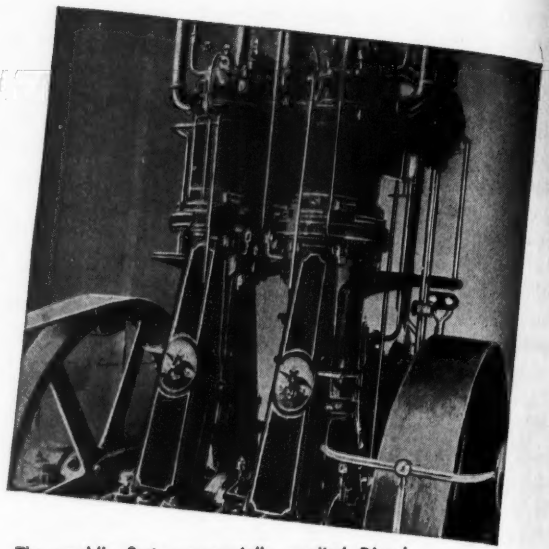
4. Means Applied to the Rock

Finally, the converted energy is applied through some type of instrumentality to the rock itself. There is hardly anything which can be found here which is not, at least in germ, employed somewhere in the surface operations of the stone-working industries, a point which reinforces the opinion expressed previously herein that transmission of energy is the central problem.

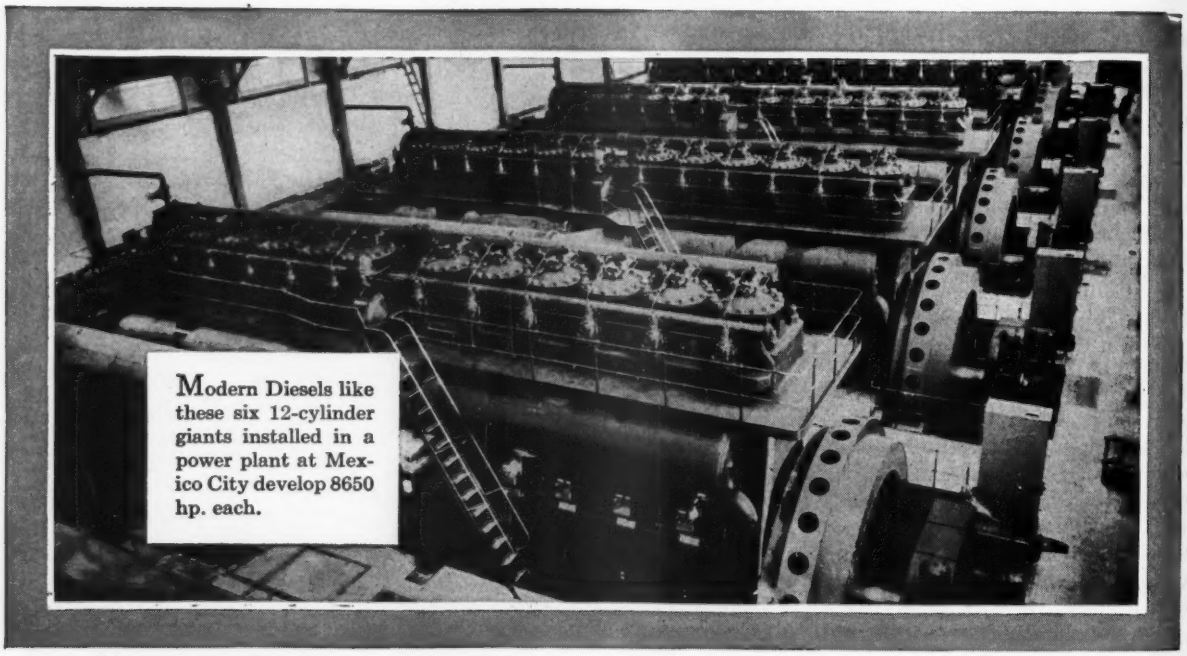
The end-use energy includes all the input types except electrical.

Dr. Diesel's Big Idea

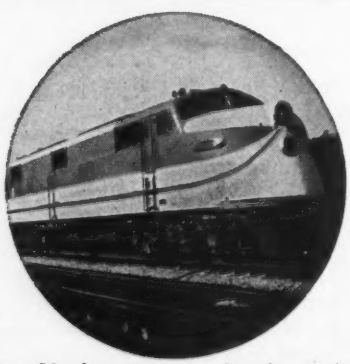
How petroleum progress helped develop a new type of power



The world's first commercially applied Diesel engine, built by Adolphus Busch in St. Louis 51 years ago.



Modern Diesels like these six 12-cylinder giants installed in a power plant at Mexico City develop 8650 hp. each.



Today Diesel engines are largely supplanting steam on the railroads. Giant Diesels develop electricity, power ships. Lightweight Diesels power trucks, buses, contractor's machinery and other units.

Eliminating spark plugs and carburetor, Dr. Diesel in 1892 patented an internal combustion engine designed to run on cheaper, heavy fuels. But years of research were needed to make the idea practical. Engineering research had to find ways to reduce weight and solve the difficult problem of injecting the fuel against high pressure. Petroleum research had to develop lubricants to reduce the fouling of pistons, rings, cylinders and valves under the intense heat and pressure—a field in which Texaco has been pre-eminently successful.

THE TEXAS COMPANY

Petroleum Promotes Progress

TEXACO

The latter is in all cases converted to thermal or mechanical energy. In the following classification the main headings denote the type of energy applied to the rock. Some energy-conversion means are included in the sub-headings to provide a more suggestive schematic presentation.

a. MECHANICAL
  Percussion:
    Surface drive:
      Cable tool.
      Mechanical picks.
    Bottom-hole drive:
      pneumatic.
      Hydraulic.
      Electric.
      Rotary-to-reciprocating.
      Sonic waves.
    Reciprocating fluid column.
      Internal combustion.
  Rotation:
    Surface drive:
      Auger.
      Drag bit.
      Rolling cutter.
      Shot.
      Diamond bit.
      Grinding wheel.
    Bottom-hole drive:
      Turbine.
      Reciprocating-to-rotary.
      Oscillating rotary.
      Electric motor.
      Rotary engine.
  Capture (grab-bucket, scraper conveyor, etc.)
  Impaction:
    Hammer drive.
    Constant force.
    Vibrator.
  Sawing.

b. HYDRAULIC
  Jet:
    Air, gas, steam, etc.
    Water, mud, etc.
    Chemical.
    Abrasive.
  Hydraulic rupture.

c. THERMAL
  Hot fluid.
  Flame.
  Arc.
  Freezing.

d. CHEMICAL
  Reaction.
  Explosion:
    Conventional.
    Shaped charged.
    With projectile.

It is important not to lose sight of incidental ideas such as the following:

a. Multiplicity.
b. Combination.
c. Wire-line and other retrieving means.
d. Cutting of an annulus.
e. Self-propulsion.
f. Resonance effects.

If, now, the foregoing classifications are further refined by the insertion of sub-subheadings, and if therefrom we select one type of energy input and one or more elements from each of the succeeding categories (including that of incidental ideas), an imposing list of hole-sinking methods is obtained to which appropriate symbols can be attached. All known methods can be classified thereunder and, when this is done, it is found that many classes can be weeded out as self-contradictory, but this must be done with great care and freedom from set opinions. A residue remains which provides a basis for hundreds of possible patent applications, all enjoying the dubious distinction of being as significant as 99 per cent of the patents already issued in the art.

The object of this exercise is, of course, to find just one concept which will point the way to cheaper drilling. However, it is a further object of this paper to suggest the foregoing procedure as a general method of approach to problematical situations of a similar nature.

CONCLUSION

The history of the development of oil-well drilling techniques follows a normal and typical pattern. The adoption of new practices was dictated by contemporary conditions, and led to substantial development of churn drilling and to the phenomenal performance, in recent years, of hydraulic rotary methods.

However, churn drilling and hydraulic rotary systems do not exhaust the list of possible economical methods of sinking deep holes. Other methods are suggested in the literature, and still others are to be expected. In particular, the many and various techniques successfully employed in the stone-working industries will become available if means can be discovered whereby energy in its various forms can be delivered with reasonable line losses to the bottom of the hole.

National Oil to Appeal Tax Assessment

The question of the correctness of County mineral rights values, when based on the average price received for oil during the past year, may receive a going over in court if National Oil Company appeals from findings of the Kern County Board of Equalization. The company protested its tax assessment before the Board in August, stating that a price of $2.14 per barrel for 13-gravity crude, used by the assessor last March, was startlingly wrong and set too high. The oil was selling for $1.90 in March, the assessment date, and now sells for $.98.

The Board refused to lower the company's assessments, saying it would have to lower all oil values which were made on that basis. The assessor contended that it is his custom to use the average price of oil for the previous year. National is being urged by other producers of heavy crude to carry its case to court in an effort to prevent the same plan being carried out this next year.

The contentions are made by the producers that the method is used by the assessor to fix a low value after a year of low prices and to fix a high value after a year of high prices. The producers say that especially in March 1949 the bottom had dropped out of the market for heavy oil properties. It is claimed that in this fixing method the true value is lost sight of and when the taxpayer tries to protest he is shunted off into protesting against a "method" or custom and the Board of Equalization says it is not there to adjust or prescribe an assessor's method.

The producers feel they are stymied and their assessments are railroaded through on a planned basis, whereas they should be given a correct value in March, high or low according to the market. They contend that the result of the method over the years without protest has left all oil values in Kern County high above the average property assessment ratio.

Presented at the A.P.I. Annual Meeting on Nov. 9, 1949

Field Development

Los Angeles Basin

Montebello Well Failure

Following electric log run to bottom of 8708 ft., Standard of California quit its Scott Investment No. 2-1 well on Sec. 1-2s-12w in the Montebello area. The company, meanwhile, is beginning work on its Baldwin No. 13-9 on Sec. 2-2s-12w.

Richfield Drill Scene

Standard Oil is completing at 3750 ft. its Kraemer No. 2-29 on Sec. 29-3s-9w in the Richfield field, Orange County. Arrowhead Oil's Bradford No. 12 on Sec. 32-3s-9w is drilling at 3100 ft. The Hathaway Oil Company Lakeview No. 1 on Sec. 27-3s-9w is digging at 4140 ft.

Santa Fe Job Idle

Idle at 4650 ft. is the St. Anthony Oil Corporation St. Anthony-Farwell No. 2 on Sec. 32-3s-11w in the 30-year-old Santa Fe Springs field. St. Anthony-Farwell No. 3 is a location on the section.

Whittier Well Good

Present yield of Union Oil's Sansinena No. 22 on Sec. 30-2s-10w at Whittier is 166 barrels of 24.7 gravity crude and 160,000 cubic ft. of gas daily from a plugged bottom of 5032 ft. No. 23 on the section is drilling at 2645 ft.

Placerita Busy Area

Placerita Canyon is still accounting for approximately one-third of drilling activity in California. A recent check showed 45 drilling rigs operating in the 80-acre "hot spot." The survey also indicated there were 110 producing wells in the field, with an average daily output of 210 barrels. The total oil output from the field was last reckoned at close to 3,100,000 barrels. Operators in the field include General Petroleum, Atlantic Oil, B. & J. Oil, Bevo Drilling, Brayton-Phillips, Buffalo Oil, O. F. Collinge, Gordon Oil and Elijah W. Hardesty. Also Independent Exploration, Lake Oil, McHale Drilling, Ivar Larson, Warren L. Meeker, Midnight Oil, Morton & Dolley, Gus Pongratz, Rothschild Oil, Shaffer Tool Works, Shamrock Drilling, Ray I. Smith, George Terry, Three D Oil, Twentieth Century Oil and many others.

In the Placerita Field, A. G. McHale's Juanita Fee No. 3, left to right: J. M. Westerfield, cathead; Earl George, lead tong; C. T. Fitzhugh, driller; A. T. Gilbert, derrickman.

Costa Mesa Well Rigged

Rigged up and standing idle is the Thomas M. Blake Costa Mesa Community No. 1 well on Sec. 15-6s-10w in the Costa Mesa area, Orange County.

Inglewood Well Drills

Aimed for production in the Sentous zone, Fred Morgan has reached 6200 ft. with Goodknight-Sentous No. 1 on Sec. 17-2s-14w in the Inglewood area. Standard of California's L.A.I. No. 1-100 is a foundation on the section. The company's L.A.I. No. 4-3 on Sec. 20-2s-14w is down 10,258 ft.

Newhall-Potrero Extension Sought

Seeking an easterly extension of the Newhall-Potrero field, Barnsdall Oil Company's Wolfson No. 2 on Sec. 26-4n-17w is drilling at 8860 ft. The company's RSF No. 62-a on Sec. 27-4n-17w is making hole ahead at 1200 ft. General Exploration's Ferguson No. 4 on Sec. 36-4n-17w is reported producing 30 barrels a day from 8988 ft.

Del Valle Try Deep

Growing deeper is the Humble Oil & Refining Company test well southeast of the Del Valle field proper. The well, N.L.&F. No. 1 continues to drill inquisitively below 11,100 ft. on Sec. 23-4n-17w.

Dominguez Jobs Drill

Union Oil Company is drilling and spot coring at 7175 ft. in its Morton-Union-Dominguez Estate No. 5 on Sec. 3-4s-13w in the Dominguez field. The Herley-Kelley Maginnis No. 1 on Sec. 32-3s-13w is making hole at 7845 ft.

Newhall Try Rigs

Circle J No. 2 on Sec. 26-4n-16w in the Newhall area is being rigged by General Petroleum to start the drill.

Del Valle Try Works

Rexford Oil Company is drilling an inconclusive depth with its Socalpete-Kinler No. 1 test well on Sec. 16-4n-17w on the west side of the Del Valle field. R. E. Havenstrite, operator, is drilling at 8530 ft. with Lincoln No. 16 on the section. His Barnes No. 4, also on the section, is in from a plugged depth of 8160 ft. for 57 barrels a day of 40 gravity oil. Standard Oil's new well, Sepulveda No. 16 on Sec. 8-4n-17w, is putting out 175 barrels of 25.5 gravity crude daily.

Riverside Wildcat Digs

Between Chino and Corona, Airways Petroleum Corporation is drilling at 2485 ft. with its Santa Anaheim No. 1 wildcat well on Sec. 28-4s-6w, Riverside County. The Orangethorpe No. 1 on Sec. 28-4s-6w in the Corona area was last reported pumping at the rate of 3 barrels daily, cutting 30 per cent. The well is bottomed at 619 ft.

San Bernardino Job Will Deepen

A checkup on field activities in San Bernardino County disclosed that Allied Oil & Gas Corporation is preparing to deepen from 1766 ft. its Moore No. 1 on Sec. 17-4n-1w in the Hesperia area. A. C. Anderson's Black Butte No. 1 on Sec. 26-6n-7w near Victorville is idle temporarily at 2202 ft. Also idle currently is the H. T. & G. G. Widney No. 1 on Sec. 33-6n-4w. Present depth is 660 ft. Western Research Lab., Inc., apparently have called a temporary halt to drilling at 2503 ft. in Yucca No. 1 on Sec. 1-3n-7w in the Cajon area.

Solemint Try Digs

Approximately four and one-half miles northeast of the Placerita "hot spot," Jesse M. Butler is drilling at 1300 ft. with Anita No. 1 on Sec. 14-4n-15w in the Solemint area.

Oak Canyon Test Drills

Southwest of the Oak Canyon field, Douglas Oil Company is digging at a shallow depth with its Oak Canyon No. 1 test well in Sec. 4-4-17w.

Rosecrans Well Pumps

Pumping clean oil at an unestimated rate, Transcal Drilling Company has completed Brownstein No. 1 on Sac. 20-3s-13w in the Rosecrans area. The derrick is near Redondo Beach boulevard and Main street. Livingston No. 1 on Sec. 12-3s-14w is starting preliminary work.

San Fernando Wildcat Drills

Although in the no dope category, it's generally believed by field men that Standard of California to last reported depth of 5740 ft. in Woo No. 1 at San Fernando had found but little encouragement.

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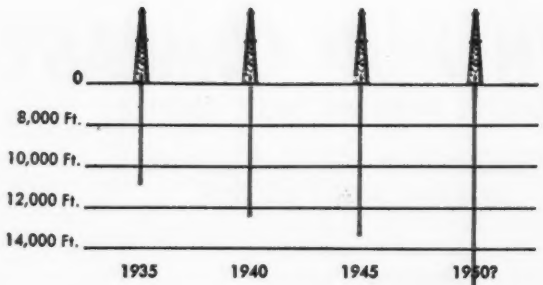

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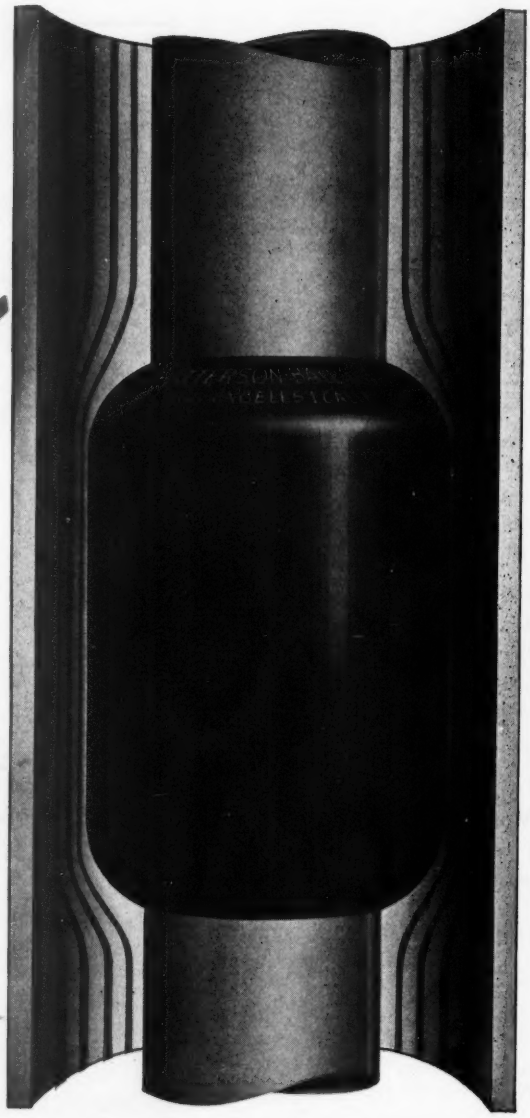

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San Joaquin Valley

McDonald Area Busy

Standard of California, which for the past years has been inactive in the McDonald Island field of San Joaquin County, recently resumed operations there. The company's return to that field was marked by the mapping out of six new drilling jobs within the proved area. McDonald Island Farms No. 4 and No. 6 on Sec. 30-2n-5e, and Weyl-Zuckerman No. 3 on Sec. 25-2n-4e have been completed for unestimated outputs from 5278, 5279 and 5278 ft., respectively. McDonald Island Farms No. 7 on Sec. 19-2n-5e is drilling below 800 ft. Prior to the current Standard drilling program, the delineated boundaries of the field listed seven gas producing wells.

Amerada Nose Wildcat Digs

Drilling is going forward at 9740 ft. in Barnsdall Oil's J.M.&R. No. 1-28 test at Amerada Nose, Sec. 28-19s-16e, Fresno County. At Burrel, L. M. Lockhart's Burrel No. 1-26 on Sec. 26-16s-18e is drilling at 6330 ft. The operator's Burrel No. 1-35 on Sec. 35-16s-18e is redrilling at 6145 ft. Originally drilled to 7000 ft., the well was subsequently redrilled to 6700 ft. The project was then plugged back to 5200 ft. for the present redrilling.

Devils Den Well Completed

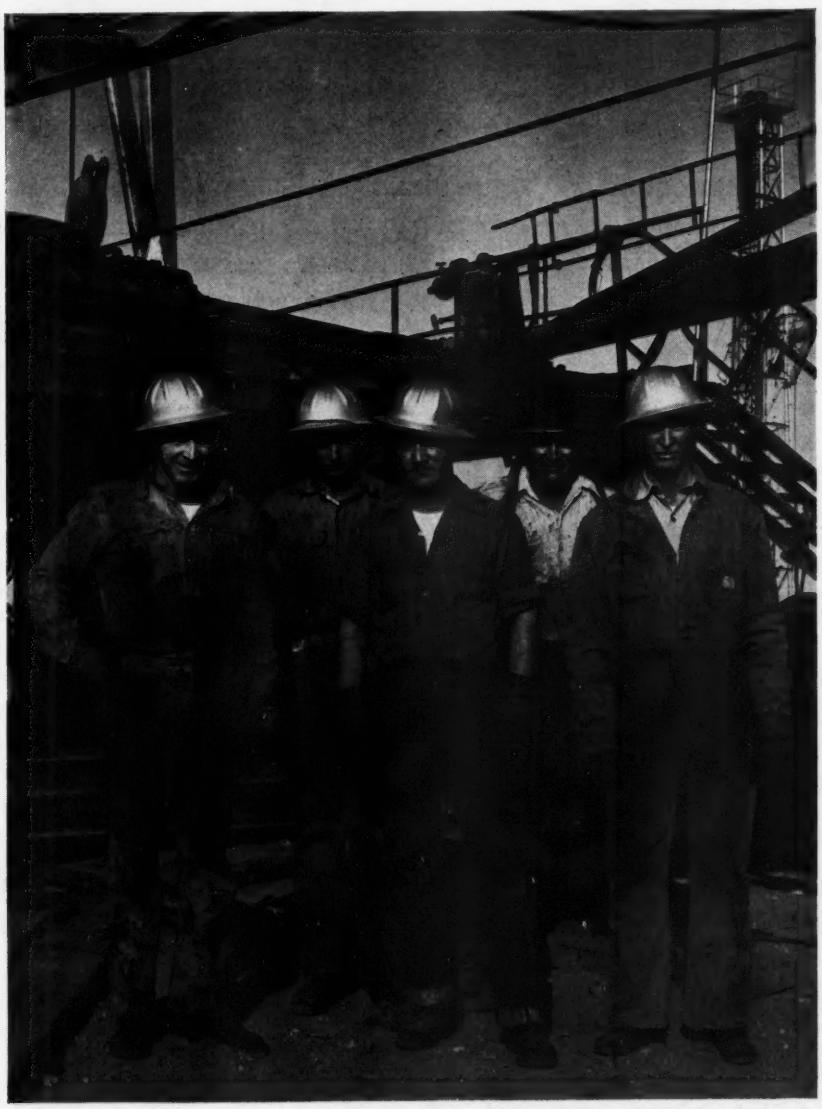
Universal Consolidated appears to have uncovered production with its Fee No. 1 test similar to that found in the Devils Den area some months ago by Honolulu Oil. The well, on Sec. 23-25s-18e, came in from a total depth of 2311 ft. The 8⅝-in. casing is set at 1490 ft. and 6⅝-in. pre-perforated liner is set on bottom. Representative gauge is not yet available on the well, which is located about a half-mile south of Honolulu Oil's Alferitz No. 67, a new zone discovery. Approximately a mile and a half east of Devil's Den production, Texas Company has abandoned its Capital Company Three No. 1 on Sec. 19-25s-19e. Prospecting went to an unproductive 5987 ft. Tritex Oil's Tritex-Porter No. 1 on Sec. 16-25s-18e is idle at 3583 ft. Fish apparently as yet has not been recovered.

Cuyama Valley Well Redrills

Redrilling at last reports was around 4400 ft. in the Bell Petroleum Company Elliott No. 81-34 on Sec. 34-10n-27w in the South Cuyama area. The venture was carried first to 4386 ft. and at that depth cemented off fish. Top of fish was 3729 ft. Sidetracked from 3685 ft. and deepened to 4366 ft., the hole was lost in the neighborhood of 3900 ft. Location falls a mile west of Richfield's Homan discovery well. At the extreme southeast end of Cuyama Valley, Richfield has started its Round Springs Unit No. 1 on Sec. 32-8n-23w.

South Edison Well Produces

The Capital Company's Lawson-Bennett No. 3-48 on Sec. 26-30s-29e in the South Edison area has been



In the Placerita Field, Atlantic Oil Co.'s Bristol No. 4, left to right: J. P. Champion, derrickman; R. W. Westerfield, pipe racker; Roy Westerfield, driller; R. E. Moore, cathead; L. C. Stewart, lead tong.

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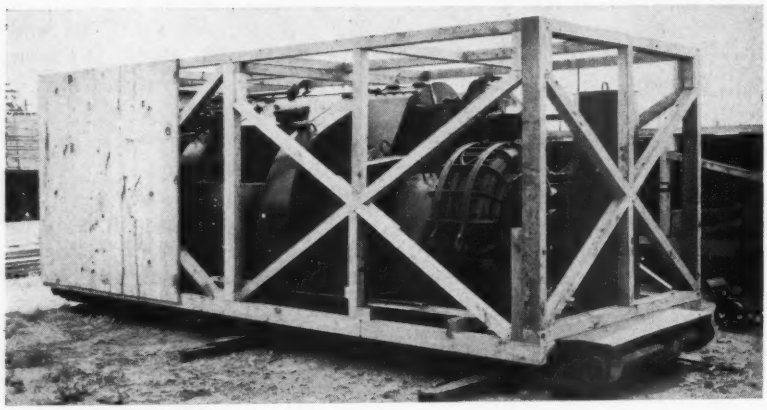

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completed at 3024 ft. for 125 barrels a day through a ½-in. bean. The Chanac was topped at 2750 ft.

Pyramid Hills Test Working

Fairview Exploration Company has set 7-in. casing at a point above present bottom of 671 ft. in its No. 5-A well in the Pyramid Hills area, Sec. 17-24s-18e, Kings County. The drilling endeavor is credited with coring an interesting measure of oil sand.

Tulare Test Interesting

Enhanced by rainbow colors and gas showings on the ditch, Hudson Oil Company's Hudson-Fay No. 1 on Sec. 24-22s-27e in the Porterville area of Tulare County at last reports was down 3350 ft.

Tejon Ranch Offsets Start

Two new drilling jobs have started in the Reserve sector of the Tejon Ranch. They are the Rose L. Bright-Enterprise Oil Company No. 1, which offsets the Rose L. Bright No. 1 producer, and the Rose L. Bright No. 2. They are on Sec. 24-11n-19w. Drilling & Production Company's JV No. 101-32 on Sec. 32-11n-19w has been completed on the pump at 4598 ft.

La Panza Test Quits

Yellowstone Oil Company has abandoned its Lewis No. 2 wildcat well on Sec. 25-29s-16e in the La Panza area of San Luis Obispo County. The well was given up at a depth of 335 ft. in gray sand, with top Painted Rocked at 295 ft. Location was about three-quarters of a mile southwest of Lewis No. 1, which went to 1315 ft. in gray sand.

Tide Water To Buy Cuyama Oil

Tide Water Associated Oil Company announces it will buy Cuyama Valley crude oil from Richfield Oil Corporation for a firm period of five years, starting next January 1. The oil will be purchased at field prices. It will be available in volume which, with the company's own production and other purchases, will meet the company's Pacific Coast requirements of crude oil. William F. Humphrey, Tide Water president, explained the arrangement with Richfield was consummated to take the place of crude oil bought since 1938 from Mrs. Carrie Estelle Doheny and the Los Nietos Company. These purchases averaged about 12,800 barrels daily, the oil executive stated. Under an agreement purchases were subject to cancellation on 24 hours' notice. The oil executive advised stockholders the Cuyama Valley oil is very desirable because of its higher gravity and greater content of light components. He said the oil will yield a greater profit than crude obtained heretofore from Mrs. Doheny and the Los Nietos Company. In summation, he added, "the problem of acquiring a new supply of desirable crude oil has therefore been resolved profitably and satisfactorily."

Carrizo Plains Holds Interest

Texas Company has two exploratory wells in the Carrizo Plains

area in the preliminary stages. Blakey No. 1, on Sec. 16-32s-20e, is in the Painted Rock sector and two miles southwest of Soda Lake. Grayson-Owen No. 2, on Sec. 13-31s-18e, is nine miles south of Simmler. Blakey No. 1 is about 17 miles southeast of Simmler.

Atascadero Venture Quits

Pago Grande Oil Company's Pago Grande No. 1 explorer in Sec. 2-29s-12e in the Atascadero area has been abandoned officially slightly below 2400 ft.

Cholame Try Starts

Independent Exploration Company has started an interesting wildcat test on the vast Cholame Ranch in San Luis Obispo and Monterey Counties. Location is in Sec. 8-25s-16e, 16 miles west of the Devils Den field. Development of oil in this area would be of great importance and open much territory to new drilling.

Ant Hill Try Fishes

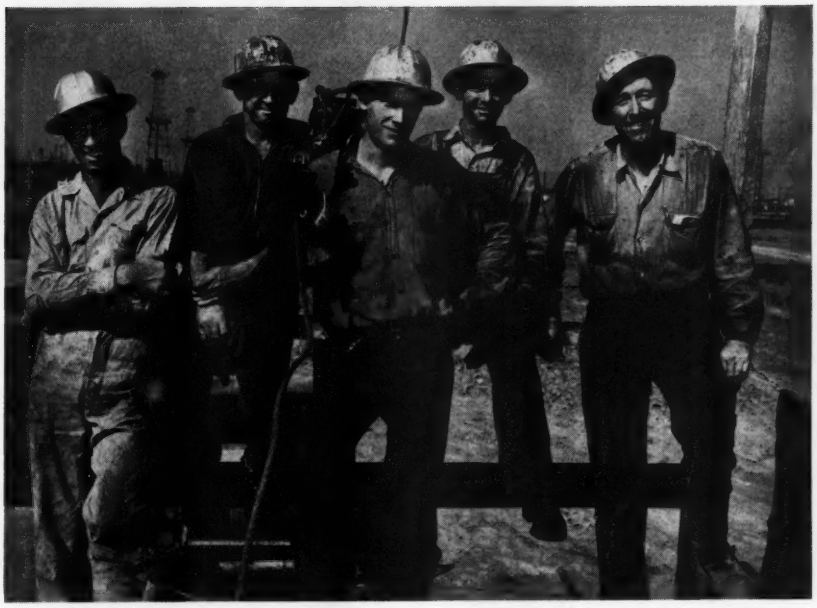
Fish has been recovered to a depth of 4520 ft. in the Kern Oil Company Bloemer No. 75 test well on Sec. 26-29s-29e in the southeast Ant Hill area. The project is down 4689 ft.

Lost Hills Test Drills

General Petroleum's Williamson No. 33-11, a deep test on Sec. 11-26s-20e in the Lost Hills area, continues to cut on down near 6650 ft.

Coalinga Try On Gas Lift

On the gas lift for 80 barrels daily of 28.8 gravity oil, cutting heavily, and 50,000 cubic ft. of gas is the Pray & Walker Nidever No. 1 in Sec. 24-20s-15e in the Coalinga area. The well is bottomed at 7862 ft.



In the Wilmington field at Union Pacific's well No. 441, Loffland Bros. Co., drilling contractors. Left to right: C. B. McGuire, lead tong; I. S. Jones, pipe racker; J. E. Kirkland, derrick; George Ray, cathead; M. P. Forrest, driller.

Mojave Try Digs

Cable tool drilling has reached a depth approximating 500 ft. in the Newton Oil Company Oswald No. 2 on Sec. 12-11n-12w in the Mojave area of Kern County. The venture formerly carried the banner of Paul Beamer.

Gold Nuggets Prove Brassy

Yellow metal found in the bottom of Charlie Allen's well near Castaic proved to be brass. Tests made at the Hornkohl Laboratories in Bakersfield showed conclusively that what was believed to be gold nuggets were nothing better than bits of brass, which started appearing when the well was 150 ft. down. The well was after water.

Republic Assets Sale Approved

The newly elected board of directors of Republic Petroleum Company has approved the sale of company assets to General American Oil Company of Dallas, Tex., according to word from Artesia, N. M. The sale is subject to the approval of stockholders. It is understood the sale will be for a cash consideration and oil payments. The price involved was not revealed.

Antelope Hills Wildcat Begins

One mile west of Antelope Hills production, Fred L. Williams is moving ahead with preliminary work on his No. 4 test on Sec. 1 28s-19e. Drill site is about two miles southeast of Independent Exploration's Bolton No. 83, which opened up new gas production a year ago.

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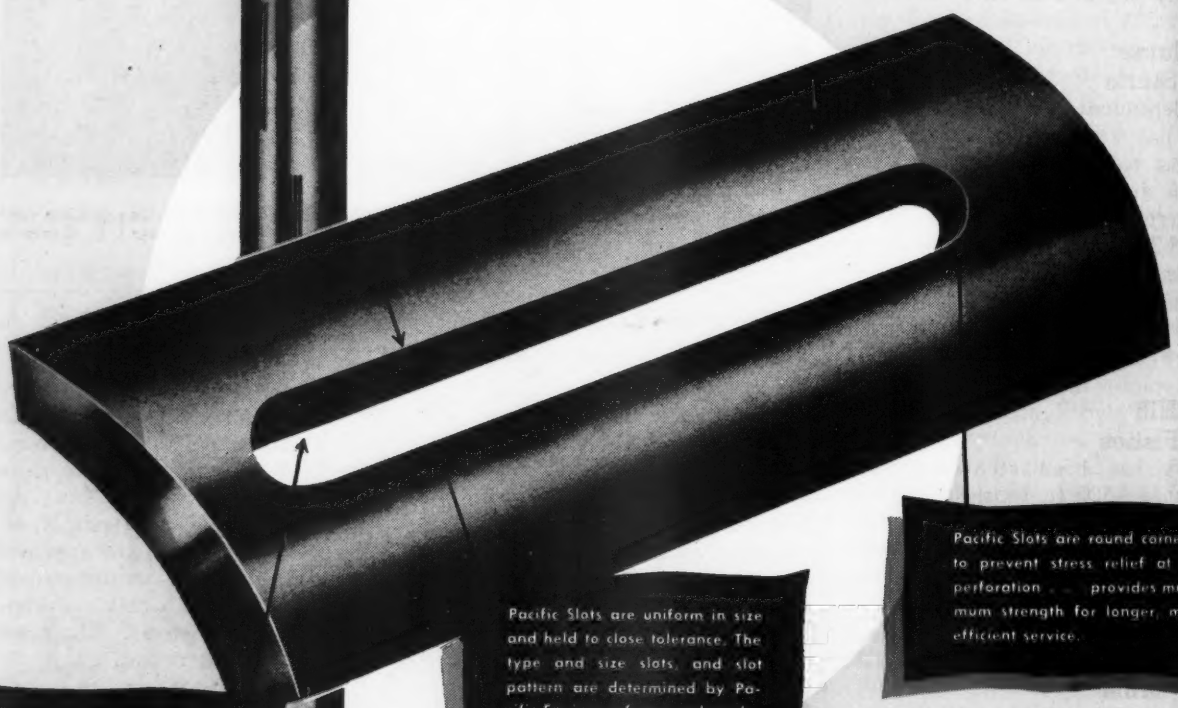

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Rincon Well Goes On Pump

Fullerton Oil's Hobson-State No. 145-5 on Sec. 8-3n-24w at Rincon has gone on the pump at 2945 ft. Initial yield appears as wash oil.

Santa Paula Well Drills

In the Santa Paula area, where oil was first developed more than 60 years ago, Crestmont Oil Company is drilling Santa Paula No. 3 on Sec. 22-4n-21w. Depth is about 800 ft. at present.

Shiells Canyon Eocene Try Works

Texas Company's hunt for production in formation of Eocene age at Shiells Canyon in Ventura County has persevered to 8487 ft. and is continuing to drill on down. The well is called Shiells No. 165 and is located on Sec. 4-3n-19w.

Lion Mountain Wildcat Drill

Humble Oil & Refining Company is busy with two wildcats in Lion Mountain area. Berylwood Investment Company No. b-1 is drilling and spot coring at 4830 ft. Theo. E. Hammond No. 2 is drilling at 2285 ft. They are in Sec. 18-4n-22w.

Ozema Try Drills On

In the vicinity of Ozema in Ventura County, C. W. Colgrove was last reported digging at 3000 ft. with Wright No. 54-18 test well on Sec. 18-7n-23w.

San Miguel Wildcat Digs

C.C.M.O. Company's Mahoney No. 1 prospect job on Sec. 3-25s-12e in the San Miguel area of San Luis Obispo County is drilling at 1134 ft. Near Atascadero, Mar-Roo Syndicate's Lampman No. 1 on Sec. 36-28s-12e is drilling at 2910 ft.

South Mountain Active Terrain

F. E. Fairfield, widely known California operator, has cemented surface casing in his Shell Casperson No. 2 and No. 4 on Sec. 19-3n-20w in the South Mountain field. The pipe was cemented slightly above 700 ft. in both wells. Drilling in the wells at last reports was nearing objective depths. Texaco's Willard No. 28 on Sec. 18-3n-20w is drilling at 2345 ft. Shell Oil's Schieferle-Heirs No. 2 on Sec. 17-3n-20w has reached 4600 ft. Price No. 13 on Sec. 20-3n-20w, a Havenstrite Oil Company drilling effort, is making hole at 3840 ft.

Tar Creek Well Digs

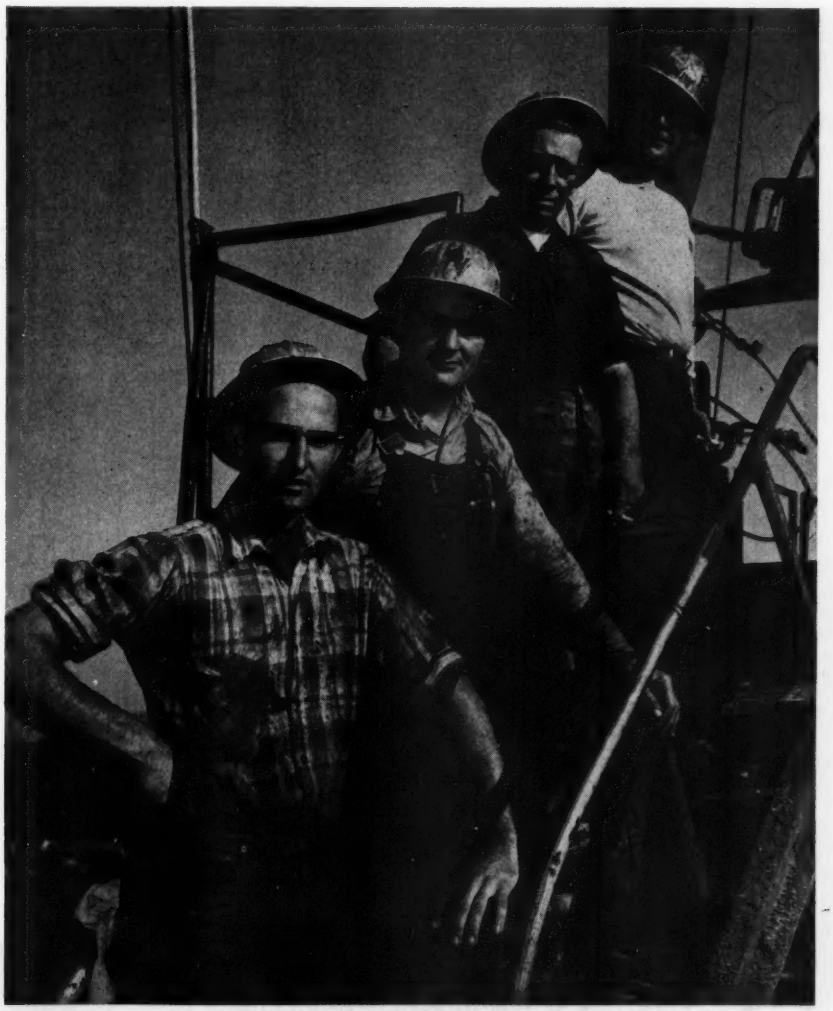
Union Oil Company's Tar Creek No. 50 at Tar Creek in Ventura County is drilling at 1100 ft. on Sec. 28-5n-19w.

Arroyo Grande Wildcat Deeper

Drilling is continuing at 3600 ft. in C. W. Colgrove's McDonald No. 2-5 on Sec. 5-32n-13e in the Arroyo Grande area, San Luis Obispo County. A formation test was conducted on the interval of 2867-2912 ft. and was not particularly encouraging.

Eureka Canyon Well On Pump

On the pump and with no estimate of yield, Thornbury Drilling Company has finished Thornbury-



Clyde Hall drilling contractor for Independent Exploration Co. and Rothschild Oil Co.'s joint venture in Sec. 30-4n-15w in the Placerita Field, left to right: B. J. Spears, lead tong; Wilson Morris, cathead; E. A. Pitts, derrick; Ray Gossett, driller.

Oceanic No. 2 on Sec. 33-4n-18w in the Eureka Canyon area, Ventura County. Total bottom is 1867 ft., with plug at 1796 ft. Union Oil is starting Fraser No. 88-14 on Sec. 14-3n-23w.

Sespe Creek Try Progresses

Sweet Development Company's Sespe Creek test well, Faught No. 1, is drilling steadily ahead below 1750 ft. on Sec. 17-5n-19w, Ventura County.

Ramona Field Adds Producer

Southern California Petroleum has completed Adams-Aguirre No. 111 in the Ramona field, Sec. 13-4n-18w, for 240 barrels of 19 gravity oil daily on the pump.

La Honda Try Cores

In the La Honda area of San Mateo County, Pomona Tile Manufacturing Company is coring below 1200 ft. with its Pomona No. 1 exploratory well on Sec. 16-7s-4w.

Santa Cruz Test Begins

Honolulu Oil Corporation is about to spud its Hinman No. 1 wildcat well in the Boulder Creek area on Sec. 17-9s-2w, Santa Cruz County. West of Moody Gulch, the Merle W. Wheeler No. 1 is idle temporarily at 100 ft.

Lake County Test Drills

In the Highland sector of Lake County, William P. McKenzie is drilling at 1470 ft. with his Evelyn Awe No. 1 explorer on Sec. 28-13n-9w.

San Marcos Wildcat Digs

One of the most interesting exploratory wells current in California is the Lewis W. Welch Janeway No. 1 wildcat well in the San Marcos area of Santa Barbara County. Welch is the owner of a vast amount of acreage in the area and success in his present undertaking would open a wide spread of virgin ground to development. The project, on Sec. 11-6n-29w, is drilling at 4740 ft. It is a strict no dope hole. On Santa Rosa Island, off the Santa Barbara coast, J. R. Pemberton is digging at 800 ft. with Tecolote No. 3.

Ventura Avenue Project Fishing

British-American Oil Producing Company's Hartman No. 17 on Sec. 21-3n-23w in the Ventura Avenue field has been plugged back from 6828 ft. to 6680 ft. After drilling out cement to 6765 ft., drill pipe stuck and the present operations are centered on a fishing job. The Lloyd Corporation, Ltd., Lloyd Corporation No. 13 on Sec. 24-3n-23w has recovered drill pipe and is now fishing for bit. Depth is 12,189 ft. The company Lloyd Corporation No. 34 on the section is drilling at 11,902 ft. Shell Oil has no less than seven wells at various stages in the field. Tide Water Associated at the same time is busy with a half dozen jobs.

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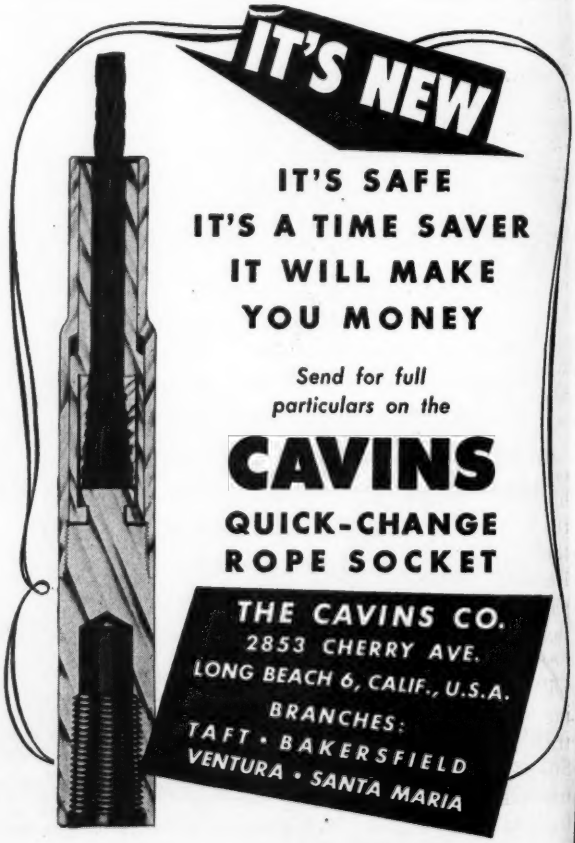

With Drilling Contractors

Camay Drilling Company has shipped a heavy rotary drilling rig to the Island of Lanai of the Hawaiian Islands group, according to an official announcement. Known prominently in California as a contract oil well driller, Camay plans to use the rig in drilling a series of water wells for the Hawaiian Pineapple Company. This is the contractor's second assignment with the pineapple organization for water wells. The holes are cased with 18-in. diameter pipe. The last three wells drilled by Camay for Wailuku Sugar Company on the Island of Maui showed excellent production. Yield is 15,000,000 gallons of water daily with only a moderate drawdown of the water level, the company reported. Camay disclosed that the total investment in this development by Wailuku Sugar was about $250,000. Sugar producers on the islands calculate that the water development will enable the plantation to boost production by some 10,000 tons. California oil well operations of Camay in recent weeks have been featured by directional drilling accuracy. Elkins No. 1, completed on contract for Camden Oil Company, was directed from the surface location to a bottom hole target more than 500 feet away. Only one whipstock was needed to score production success in going to a total depth of 3316 feet. Present output of the new well is about 150 barrels daily. Camay has just given the finishing touch to two wells in the Los Angeles Harbor area for Beach Oil Development Company. The contractor made known that since July 10 eight wells have been completed for Long Beach Oil at the harbor. Most of the drilling jobs are brought in from a central location. Comparable to the Shiells Canyon producer, they are usually bottomed several hundred feet away from the surface site by whipstocking. In the Ramona field, Camay has completed the Southern California Petroleum Corporation Adams-Aguirre No. 111 on Sec. 13-4n-18w for an initial yield of eight barrels of 18.8 gravity oil an hour, cutting 8.6 per cent. Total depth is 4853 feet, with water shut off at 4163 feet. Camay is starting No. 110 well.

Election of B. B. Smith as vice president in charge of operations for Loffland Brothers Company and T. W. Wheeler as vice president in charge of contracting has been announced. Smith is widely known in the petroleum industry, having been actively engaged in the operation of drilling equipment for more than 30 years. He has been with Loffland for the past 15 years. Before being placed in charge of operations, he has been vice president in charge of the Houston division. Wheeler recently joined the contract drilling organization and has devoted most of his time to securing drilling contracts. He is well known in the oil industry. George Mallory becomes general superintendent in charge of the Houston division with headquarters in that Texas city. Mallory before elevation to his new post, was superintendent at New Iberia, La. He has served in various supervisory capacities with Loffland for 20 years. J. E. Cockburn succeeds Mallory as superintendent at New Iberia.

The recent passing in Fort Worth of H. L. Harris, 79, saddened the many friends of his son, J. H. Harris, vice president of the San Joaquin Drilling Company in Los Angeles. The elder Harris was a retired railroad man.

California's chapter of the American Association of Oilwell Drilling Contractors met November 21 at the Petroleum Club in the Los Angeles Biltmore Hotel. Bill Cline, new chapter chairman, presided. Principal speakers included Nicholas D'Arcy and Jack Forline.

Roger J. Wolfe, Grey Wolf Drilling Company, has been elected chairman of the AAODC Houston chapter. He succeeded W. Gilbert Prince, Prince Drilling Company, Inc. Wolfe also is vice president for AAODC in the Gulf Coast area. J. F. (Pat) Corley, Production Service Company, was appointed vice chairman of the Houston chapter, succeeding Rex Parks, Loffland Brothers.

Union Oil Company at last reports was using 10 contract drilling strings, including one repair crew, in its California and Washington operations. Four strings were active in the Los Angeles Basin, two in the Ventura district, two in San Joaquin Valley, one repair crew in the Coastal division, and one in the state of Washington.

Kay Morse Drilling Company is drilling four jobs near completion depth for Ray Smith in the Placerita field. In the same field, Young Bros. Drilling Company has completed for Gus Pongratz Dutch No. 1 for a satisfactory yield on the pump at 1879 feet.

Brown Drilling Company has started Honolulu Oil's Hinman No. 1 wildcat on Sec. 17-9s-2w at Boulder Creek in Santa Cruz County.

Santa Fe Drilling Company is working toward the spudding stage with Union Oil's Purisima No. 64 on Sec. 36-8n-34w in the Lompoc field.

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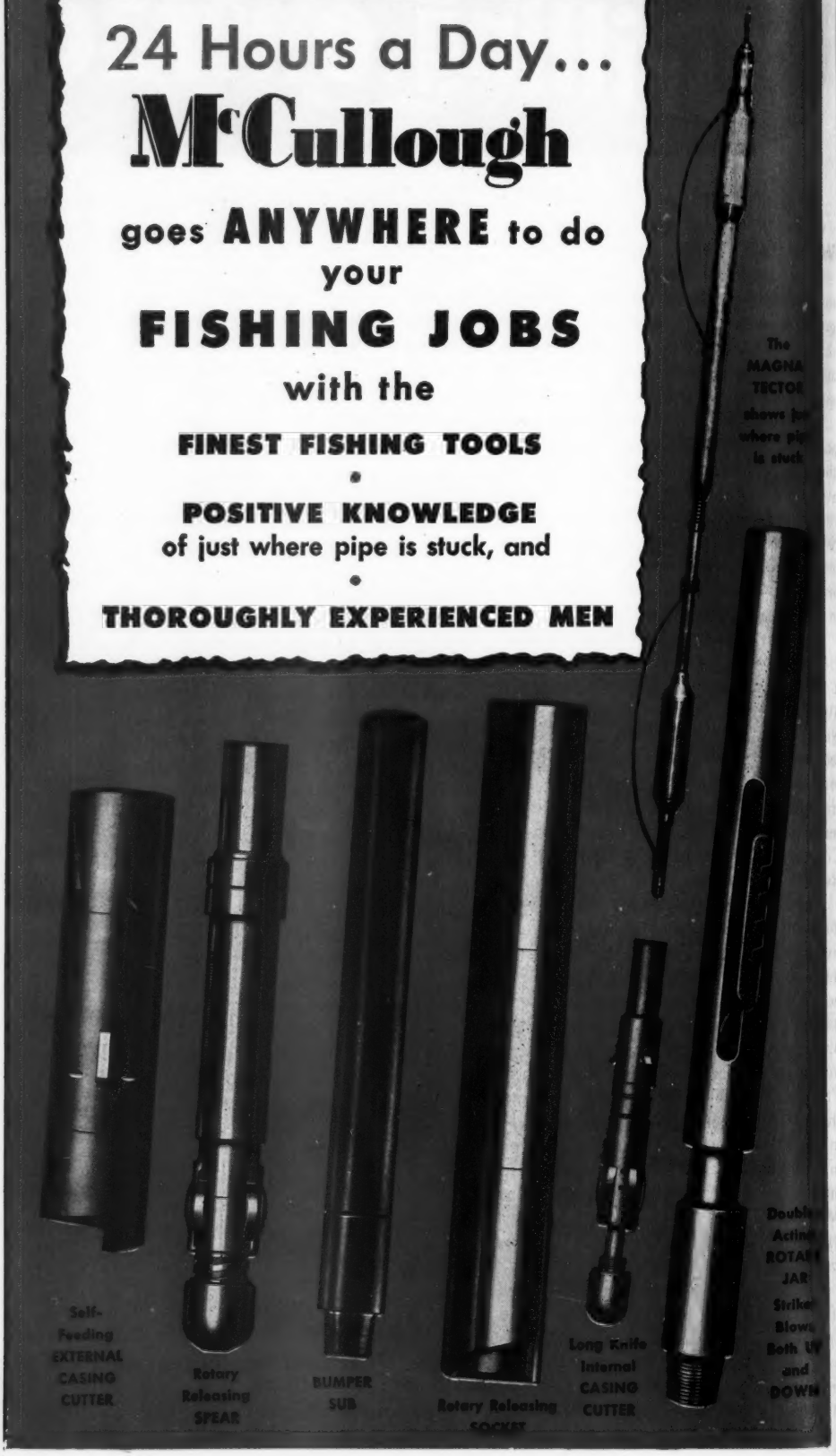
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Rocky Mountain NEWS

Colorado—Idaho—Montana—New Mexico—Utah—Wyoming—Western Canada

Wyoming

Southwestern Wyoming appears to be on the verge of important new gas discoveries which will assure this area as well as northern Utah and southern Idaho with an adequate supply of natural gas.

Stanolind Oil & Gas Co. was preparing to test strong gas shows in the Dakota sand below 13,000 feet at the Canyon Creek wildcat near the Wyoming-Colorado line in Sweetwater county. The hole was bottomed at 13,321 feet, and heavy pressure equipment was installed prior to making tests.

Recently Continental Oil Co. and Husky Refining of Cody completed a Dakota gas discovery at Salt Wells in Sweetwater county estimated good for 12 to 13 million cubic feet per day, through choke. A four-mile pipe line will be laid next year from this field, south of South Baxter Basin, to Mountain Fuel Supply Co.'s line between Hiawatha and Rock Springs.

Mountain Fuel, operator of the deep Church Buttes gas field in Sweetwater and Uinta counties, has unitized the Hiawatha structure in northern Colorado and plans to drill a 14,000 test in the area next year. Meanwhile the firm is drilling below 13,200 feet at well No. 7 in Church Buttes, first test to go below the Dakota gas producing horizon in quest of the deeper Nugget sand in the Sundance formation, which may lie as deep as 15,000 feet. This deep test will explore the possibility of an "oil ring" underlying the gas dome at Church Buttes.

In the opposite, northeast corner of the state, the booming Fiddler Creek and West Fiddler Creek areas continued to hold the spotlight of drilling activities in the Rocky Mountain region.

Six wells were completed in the area during the first week of November for a combined initial production of 4,537 barrels of high gravity oil—an average of 750 bbls. per well. Taylor Oil Co.'s No. 2 Jessie in section 23-46n-65w flowed 508 bbls. in eight hours through ½-inch choke. Far West Oil Co. and Hancock Oil Co. of California completed two producers, Bill Tomberlin had another good completion, and Black Hills Drilling Co. finalled one well for 640 bbls. daily through ¼-inch choke.

Estimates of total production for the general area, including Fiddler, West Fiddler, Hay Creek, Skull Creek and Mush Creek, run as high as 20,000 bbls. per day, although less than half of this volume is being marked through the new pipeline route from Newcastle to Lance Creek. Recent rumors credit Stanolind, Texas and other majors with checking on the possibility of purchasing an interest in the Plains Pipe Line Co. line.

Prospects for better marketing outlets are also improved with the announcement that Frontier Oil Refining Co. is planning to build a products pipeline from its refinery at Cheyenne to Omaha, Nebr. Frontier takes a good share of Fiddler Creek crude. Contract has been let to Pacific Pipe Line and Engineers, Ltd., of San Francisco, to survey the proposed 300-mile route from Cheyenne to Omaha.

The rise of Frontier Co. from a 1,000-barrel-a-day plant in 1940 to a well-integrated oil company with producing, refining and marketing divisions is one of the outstanding success stories of the Rocky Mountain region. Headed by M. H. (Bud) Robineau, Frontier now has a modern 11,000 barrel refinery in Cheyenne, an expanding marketing area, and a producing division with production in Fiddler Creek and a wildcatting program in other areas.

Recently the company was awarded a contract for building a three-quarter million dollar coking unit with a new thermal cracking unit at its Cheyenne refinery.

While new reserves are being developed in Fiddler Creek with surprising regularity, the rate of production in nearby Mush Creek appears to be declining sharply. Recently the record of 27 wells completed two years ago in sections 26 and 27, 44n-63w, was examined. These wells had an initial production of 2,267 barrels oil per day—or 103 bbls. per well. Today five of the wells are abandoned and the remaining 22 are producing a total of 499 bbls. per day, or an average of 23 bbls. per well. Production comes from the Newcastle sand around 4,000 feet.

On the other hand, Fiddler and West Fiddler Creek operators are counting on better sustained production from the Newcastle sand at around 5,000 feet, due to the greater saturation, porosity and permeability of the formation. Just one year old in October, the Fiddler Creek field has already surpassed Mush Creek in production.

A year ago Fiddler Creek achieved a separate identity from Mush Creek when Clark Drilling's No. 1 Witzel in section 19-46n-64w flowed 238 bbls. of 48 gravity oil daily from the Newcastle sand at 4552 feet. Prior to that time, the area had been considered more or less an extension westward of Mush Creek.

The area has attracted many venturesome independents, who are drawn by such factors as low cost drilling, high gravity green oil, and the new pipeline outlet. Cost of drilling a well to the pay sand is estimated generally at $35,000, plus

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another $15,000 for completions. There have been few if any dry holes in this new area of development.

Compare this cost with that of drilling a 10,000-foot hole to the Embar lime in the comparatively new Worland field in Wyoming's Big Horn Basin. It costs around $400,000 to complete a well at Worland, due to tough drilling and heavy acid treatment, as well as other factors.

Among independents currently active in Fiddler Creek are Black Hills Drilling, Clark Drilling, Far West Oil Co. of Casper and Hancock Oil Co. of California, Northern Ordnance, J. D. Sprecher, Taylor Oil Co., Trigood, Frontier Refining, Brinkerhoff and others. Texas Co. is active among the majors, and Pacific Western recently moved a rig from its failure in Salt Wash, Utah, to this area.

The wildcatting trend is swinging to the west, following the recent completion of the No. 1 Martin-Connally in section 25-46n-66w for an initial better than 3,000 bbls. daily. This well came in four miles west of nearest production in Fiddler Creek.

Posted prices for crude oil in this area are $2.65 per barrel, to which is added a pipeline transportation charge of 30 cents a barrel at Lance Creek.

The record producer in the Fiddler Creek area was recently completed by Frontier Refining at No. 1 Mallette-Govt. in 30-46n-65w for more than 4,000 barrels per day initially. Frontier immediately staked six offset locations. In section 21 of the same township and range, Union of California's No. 1 State flowed 350 bbls. per day from the Newcastle sand between 5000-5010 feet.

Fred Manning's attempted one-mile northward extension of the Horse Creek field in Laramie county was listed as a failure when the venture in 21-17n-68w was suspended indefinitely in mid-November. The well found 10 feet of fair saturation in the Muddy sand below 5987, but failed to yield to heavy acidizing and swabbing.

In the Horse Creek field proper

General Petroleum has completed its two-year development program which boosted the output of the field from 500 to 2,800 bbls. daily. Only 2,000 bbls. daily can be marketed, due to pipeline limitations.

Steelco Drilling Co.'s interesting wildcat test on the outskirts of Glenrock was drilling below 6,300 feet in the Frontier sand, which proved hard and tight. Hopes of finding production are centered in the deeper Dakota or Lakota sands.

Prospects of town-lot drilling in Glenrock are indicated by the fact that Glenwood Oil Co., an Indiana concern, is seeking to quiet title to 33 town lots, and is planning a test regardless of the outcome of Steelco's venture.

Phillips Petroleum is also clearing up titles to alleys and streets in Glenrock which have been leased for oil rights. The town has contacted Peoria, Ill., for copies of ordinances dealing with the subject of town-lot drilling.

Amerada Petroleum Co. has completed its second producer in the new Sage Spring Creek field north of Casper for 55 bbls. per day, on the pump. The 34.5 gravity green oil comes from Dakota sand below 7297 feet. The firm is drilling below 2300 feet at No. 3 and has set surface pipe at No. 4, a two-mile stepout to the south.

In the Sussex area, north of Salt Creek, American Liberty of Dallas has abandoned two attempts to extend the productive limits of the field. The No. 2 Govt., nearly a mile south of Continental's nearest production in the Sussex unit, tested water in the Shannon.

In the Big Horn Basin, Fred Goodstein of Casper and Fred Manning, Inc., of Denver have made location for a deep basin test in the McCullough Peak area, section 21-54n-100w, Park county. The location is six miles south of Stanolind's record "dry hole" at the Big Sand Coulee, which was abandoned below 13,000 feet. The new wildcat test may have an important bearing on Superior Oil Co.'s lease play

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through the main axis of the Big Horn Basin, extending from townships 50n-95w to 52n-97w.

Completion by Carter Oil Co. of two new wells on the south side of the Elk Basin field is expected to lead to further revision of the Embar-Tensleep participating area. The firm completed its No. 10 Johnson-Watson in 8-57n-99w for 290 bbls. per day on the pump, and also finaled its No. 4 Watson for 292 bbls. per day, both from the Tensleep. Both wells are just outside the Tensleep participating area.

Sinclair Oil & Gas Co. has sold its properties in the Dubois field in Fremont county to Perry Cole, Cheyenne independent. The field covers 2241 acres on a surface structure 10 miles north of the town of Dubois. Little of the low-gravity black crude has been produced this year due to marketing conditions, and the new owner has not announced any plans for operation of the field.

The deepest wildcat in Fremont county, British-American's well at Whiskey Peak, was abandoned early in November at a total depth of 13,321 feet. The Dakota sandstone below 13,040 was hard and tight, and the Lakota section was missing. British-American has moved to a new wildcat location in Fremont county at Green Mountain, in section 2-28n-94w—a 6500-foot test.

A possible new discovery has been made in an area just outside the Teapot Dome naval petroleum reserve in central Wyoming. Midland Oil Co., a small independent, tested a flow of 42 gravity light green oil at a depth of 2170 feet. Further testing was delayed by cave-ins in the bottom 50 feet of hole.

Merle E. Morton, president of Morton Oil Co. of Casper, has acquired two old oil fields in Natrona county. He purchased the Poison Spider and South Casper Creek fields from Empire Oil Co. Combined production of the two fields is only 150 bbls. per day of low gravity black oil, but a ready market is furnished by Casper refineries.

At tone time Poison Spider furnished natural gas for Casper. Only six miles to the west, Pure Oil Co. discovered the deep West Poison Spider field, where production was found in Frontier sand at a total depth of 14,309 feet. This production record has since been exceeded by Standard of California's Mushrush No. 5 in the Wasco field, Kern county, California, with pay found in the Eocene between 15,250-15,530 feet.

Casper geologists recently elected George Berry of Sun Oil Co. as president for the coming year. Other officers are Joe H. McCoy, Sinclair Oil & Gas Co., first vice president; Klaas Van der Weg, General Petroleum, second vice president; Bob Mallory, Stanolind, secretary, and Allan Cree, Cities Service, treasurer.

The geologists recently heard two interesting lectures. One, by Paul Paine, discussed the subject of "Valuation of the Oil Fields," and the other, by Dr. J. Hoover Mackin, was on "Altitudes and Local Relief in the Big Horn Area During the

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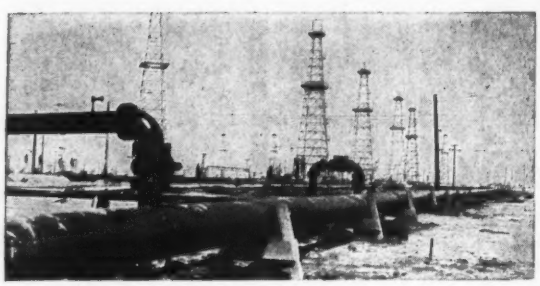

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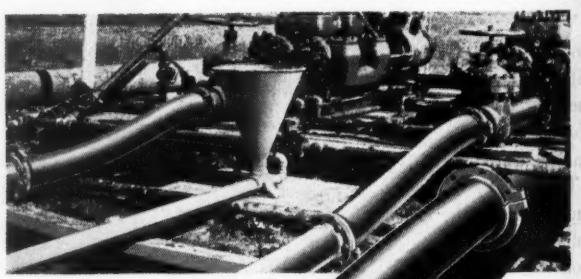

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Cenozoic." Both lectures were sponsored by the American Association of Petroleum Geologists.

New Mexico

Leasing activities spurted in the San Juan Basin of New Mexico following the wildcat strike near Lindrith, which some geologists say indicates a 100-mile belt of oil production in the northwestern part of the state.

The well, Delhi Oil Corp.'s Ingwersen Federal No. 1, is 100 miles east of the Rattlesnake well opened in 1924. Both hit pay in the Dakota sand. Oil men say production from the Dakota sand has been proven in an area more than 30 miles wide across the entire San Juan basin.

The wildcat flowed freely in a seven-hour test made during the first week in November. On a seven-hour-test, the recovery was 5700 feet of 43 gravity oil, 30 feet of oil cut mud and 300 feet of mud. Packer was set at 7665 feet and total depth of 7802 feet following perforations in the casing between 7680-86 with 24 holes. The production is from Second Dakota, called at 7263 feet.

Three benches of Dakota sandstone were logged: the first below 7515, second between 7623-7690 and the third from 7720-7750, where Morrison shale was found. Casing was cemented to total depth.

The operation in 20-24n-2w is conducted jointly by Delhi and Magnolia, who are unitizing a 30,000 block. Cleaning out operations are in progress, and pumping equipment is on the way.

The Lindrith strike has set off new activity in southwestern Rio Arriba county. Seismic crews and others from major and independent concerns are rechecking the location. Lease trading is underway with demand high for acreage adjoining Lindrith township.

Nebraska

Several firms have tried to duplicate Ohio Oil Co.'s discovery of a new oil pool in western Nebraska all without success. Now Ohio is planning to drill a stepout one township south of its discovery well in the Gurley field near Sidney.

The semi-wildcat test in section 7-14n-49w is listed as a "tight hole" —with no information to be given out until completion.

Meanwhile Ohio has completed the No. 2 Knievel in the Gurley field for 220 bbls. per day on the pump, with production coming from the 1st Dakota below 4376 feet. The No. 1 Knievel in 2-15n-49w was completed as a salt water disposal well at 5026 feet, total depth, and plugged back depth of 4469.

Ideal Drilling Co. of Casper has abandoned its No. 1 Bosley in 19-13n-42w, southern Deuel county, at 3885 feet after finding encouraging shows of oil in cores from the Dakota. The sand was hard and tight. It is reported Ideal will drill another test before its leases expire on the acreage.

Two other tests in the Julesburg Basin have been abandoned. Midwest Drilling Co. plugged its East Pawnee Creek venture in 15-9n-55e, Logan county, Colorado, after the Muddy sand proved hard and tight. The well went to 5814 feet in Lakota. Fred M. Manning, Inc., abandoned a well in the Alexander block, in section 6-7n-53w, Logan county, Colo., at 5260 feet. The well found Muddy sand hard and tight, and Dakota water-saturated.

Colorado

Amerada Petroleum Corp. tested gas at the rate of 2,908,000 cubic feet daily on drill stem test in the Dakota at its No. 1 unit in Section 14-9s-101w on the Asbury Creek wildcat in Mesa county, Colo. Dakota was topped at 2715 feet and the test was made between 2833 and 2873 feet. The tool was open one hour.

A subsequent test was made between 2914-2936 for 90 minutes and recovered 44,000 cubic feet gas per day along with 1800 feet salty water and 30 feet of drilling mud. The operator was last reported drilling below 3033 feet in shale on the way to granite.

There was some speculation that the gas may contain a high percentage of carbon dioxide, similar to wells on the Garmesa and Carbonera structures northwest of Asbury Creek, but no analyses have been reported.

Pure Oil Co. is testing its No. 1 Unit in section 14-46n-13w on the Horse Fly Unit in Montrose county, in the expectation of making a small producer in a saturated zone in the top of Devonian around 1900 feet. The well was plugged back to 1970 feet from a total depth of 5035.

H. E. R. Drilling Co. was reported drilling below 5200 feet at the No. 1 Marr-Thomas in 1-38n-19w, located halfway between the Western Natural Gas Co. well and the first H. E. R. well on the Dove Creek structure. The venture is reported to be higher structurally

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For over 30 years Jensen has used its field experience, engineering knowledge and manufacturing skill to produce pumping units that lift oil with rock-bottom expenditures for maintenance and repairs. The result is more profit on any well that is Jensen equipped.

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than the discovery well drilled by Western Natural et al. The first H. E. R. well was a failure in the upper Pennsylvanian.

Pure Oil Co. is drilling below 5900 feet at the West Douglas Creek wildcat in 29-2s-102w in Rio Blanco county. The well tested water between 5392-5405 in the Dakota and is on the way to the Weber sand.

General

First definite steps to consolidate the three district federal land offices in Wyoming at Cheyenne raised a political furore in mid-November. News of the impending consolidation leaked out in oil circles when the federal land office began moving into larger quarters in the fourth floor of the Federal building in Cheyenne. Personnel at the other district offices in Buffalo and Evanston were given the opportunity of transferring to Cheyenne.

Immediately Casper, "oil capital of the Rockies," set up a clamor for the location of the consolidated office. The Casper Chamber of Commerce made a strong bid for the office, pointing out that more than two-thirds of the business transacted with the land office originates in that city. Other civic groups joined in the drive to obtain the office, pointing out that it should be located in Casper so as to work more closely with the U. S. Geological Survey and the state mineral supervisor. Both Casper newspapers printed strong editorials supporting the claim.

But Senator Joseph C. O'Mahoney, senior senator just returned from Washington, was cautious in making any statements. Pressed by newsmen, he said that he was aware that the Bureau of Land Management in Washington had recommended the consolidation as an economy move. He said he had a letter from the Bureau pointing out that consolidation of federal land offices had been completed in all western states with the exception of Wyoming and California.

Long under consideration, the move had been delayed by vigorous opposition from the townspeople of Buffalo and Evanston. With the delegation of authority from Washington to approve leases "over the counter," the work of district land offices increased. Applications for leases were still being made at the Buffalo and Evanston offices, but the work of adjudication was centered in Cheyenne. Recently Perry T. Williams was transferred from Washington and made manager of the Cheyenne office.

It was anticipated that Casper would continue to press its demand for the office and perhaps enlist the aid of other towns in the central and northern part of the state. Oil company executives, landmen and many ranchers dealing with the land office on grazing leases were expected to join the fight.

Western Canada

The highest price ever paid for a single quarter-section in Alberta's history was recorded recently when Tanner & Co. of Calgary paid $918,662 for 160 acres of oil rights in the Redwater field. Announcement of the sale was made by Hon. N. E. Tanner, minister of mines and resources for Alberta.
were sold at auction by the Alberta

Eight quarter-sections of land were sold at auction by the Alberta government for a grand total of $2,987,675. The Calgary firm also bid successfully for Parcel 64, which includes oil rights in the northwest area of the Leduc field, near Imperial's No. 1 Egremont, one of the most successful wells in the section. The firm purchased Parcel 65, also in the northwest corner of the field, for $677,267.

Previous high figure paid for a quarter-section in the province was the $902,800 paid by British-American for a quarter section in the Redwater field last August.

Ohio Oil Co. bought Parcel 63 in the southeast sector of the field for $420,031. In the northwest sections of Redwater field, Canadian Gulf Oil paid $350,000 for Parcel 66 and Pacific Petroleums paid $325,001 for Parcel 69. Three bids were rejected.

In the Leduc field, Bay Petroleum paid $51,150 for Parcel 3 and Sam Yeske of Edmonton paid $23,850 for Parcel 4.

The record purchase was made by a Canadian syndicate using Canadian capital exclusively and headed

by E. H. and C. R. Tanner of Calgary. They reported the land will be drilled and operated by one of the major oil companies, will full ownership remaining with the syndicate.

Pincher Creek anticline, scene of a major wet gas discovery estimated at 80,000,000 cubic feet per day recently, has not panned out as an oil field. Canadian Gulf Oil announced its deep test well, the No. 1 Fred Schrempp on the flank of the anticline, struck water at 12,563 feet.

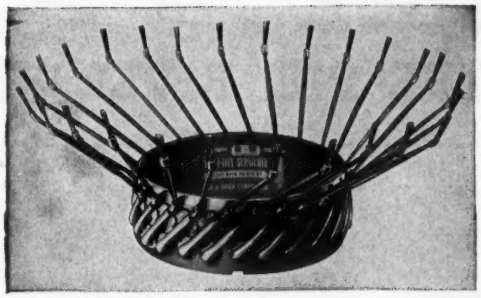
The deep test, which cost Gulf an estimated $4,000,000, apparently proved that while Pincher Creek has gas on the crest, it has no oil down the flank of the mountain front structure. In that respect, it differed from Turner Valley.

Meanwhile Gulf has completed its 23rd and 24th wells in the Redwater field and has rigged up on two others. The Gulf M. Pich No. 9 was given an initial of 1440 bbls. on four-hour test, and Gulf M. Pich No. 10 with 1458 bbls. initial.

Five Texas independents have commenced seismograph and exploration work on Canadian Pacific Railway oil rights in the Wintering Hills due east of Calgary. The new combine includes George and Herman Brown, Heep Oil Corp., Conroe Drilling Co., P. R. Rutherford and V. A. Brill. Development work is expected to start shortly under an agreement made by the Texas combine with the Atlantic Oil-Pacific Pete-Princess Pete team for exploration work on the property. The agreement gives the Calgary holders of the C.P.R. permit, Atlantic Oil Co., a 50% interest.

Oil production marched closer to Edmonton as the Imperial Excelsior wildcat, a few miles from Bon Accord and only 15 miles north of the city, caught the spotlight with an oil discovery.

The company reported a recovery of 950 feet of oil in drill stem tests of the D2 zone at 3836 feet. The well is located about five miles southwest of another Imperial wildcat, the Bon Accord No. 2, recently started drilling.



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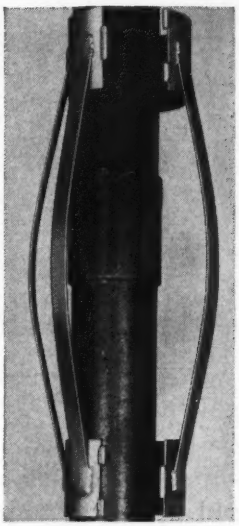
Remove Mud Cake, Center the Casing and You'll CUT CEMENTING FAILURES to the Core!

MORE AND MORE OPERATORS are getting better cement jobs the first time, eliminating need for squeeze cementing and saving thousands of cementing dollars with this B and W equipment. Here's how:

MUD CAKE REMOVAL is accomplished with B and W Multi-Flex Scratchers installed on the casing opposite the cementing zone. Strong multiple-wire fingers 5" long combine strength with reversibility . . . are flexible to adapt themselves to hole contour for minimum disturbance of the mud cake while running in . . . insure *complete mud removal* during cementing operations.

CASING CENTERING with B and W Latch-On Centralizers installed either at the rack or rotary table eliminates troublesome channeling, insures better cement bond between casing and formation. Split hinge construction makes installation easy on either collared or external upset casing . . . both straight and spiral types are available to meet all well conditions.



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Prospects appear bright for four new areas in the fast-growing Alberta oil development picture.

Normandville, the big discovery in the Peace River Block, is expected to stimulate development in the northwest and bring new prosperity to that region. The new producer is about 30 miles south of the flourishing Peace River district. It was credited with an initial flush production of 1,800 bbls. per day, with some water difficulties to be solved.

The new Imperial Excelsior strike only 15 miles from the provincial capital of Edmonton in section 3-56-24w4 is being watched with close interest.

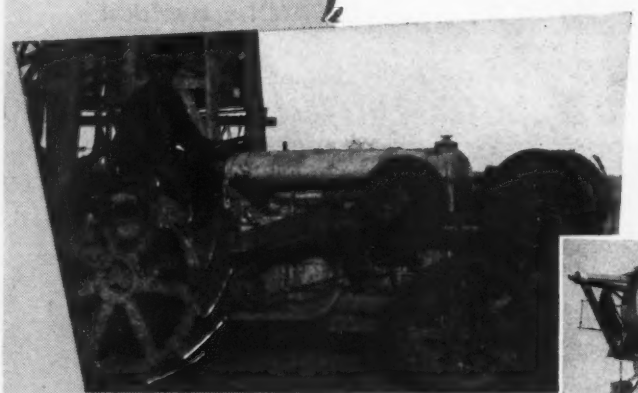
Ross Petroleum's success on the flank of the Leduc field gives promise of extending the limits of that oil producing area substantially.

REMEMBER THE RED RIVER VALLEY?

Were any of you Old Timers at Burkburnett?

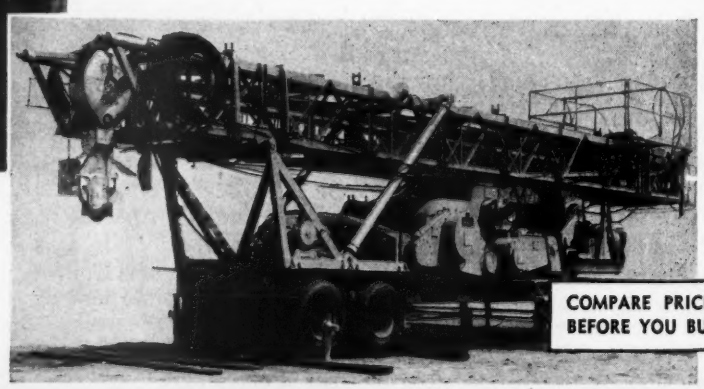
Only spot in the world where a roughneck could stand up to his knees in mud while the wind blew dust in his face! Texas and Oklahoma fought over this oil field. Texas Rangers, Federal Deputy Marshals, Oklahoma National Guardsmen were called out before it was settled. Uncle Sam won. Don't ask us why.

BUT Wilson *WAS THERE! AND WILSON WAS* FIRST!



Above: **The daring young man on the tractor is John H. Wilson. The mud is familiar to all old timers.**

The FIRST WILSON WINCH, the first practical commercial power winch, was built at Burkburnett in 1923. Designed by John H. Wilson, built on a Fordson Tractor furnished by the Caro Motor Company of Burkburnett, it was sold to W. M. Priddy of Wichita Falls, Texas. It ran for many years, and was the forerunner of thousands of Wilson Winches. This winch revolutionized oil well servicing. WILSON has had many FIRSTS since then!



Right: **The MOGUL TORCAIR WINCH represents the most modern type of oil field servicing equipment. Wilson is still FIRST!**

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Pike Drilling Company Shares Profits At Picnic

A company picnic where more than $85,000 is distributed in profit-sharing checks among 158 employees, is really something to commemorate in deathless prose. Anyway, that is the opinion of the entire force of Thomas P. Pike Drilling Company, after the wonderful time they had at their first annual picnic on October 9, 1949. This dollar-decorated event was held at the General Petroleum Picnic Grounds, near Old Fort Tejon, Lebec, California, which was a somewhat central meeting point for the drilling crews at the various oil fields where the company is operating its ten rigs.

Thomas P. Pike Drilling Company of Los Angeles, operates under an Incentive Management and Profit-Sharing Plan which has fully vindicated the judgment of President Thomas P. Pike, that "you can make more money with an employee, than out of him". Operating under this plan for two and one-half years, they have reduced their costs, increased production and eliminated waste, with the result that their profits have risen sharply for the benefit of all concerned. But above all material gains, has been the feeling of mutual respect and confidence which has been developed between workers and the management. In this particular case, the workers are part of the management: Men from all levels of the employees, are invited to meet with the management as members of their Advisory Board in a monthly meeting which is held outside the offices. At these sessions, the month's production, the costs, the profits and other matters usually considered upper-bracket secrets, are freely discussed and acted upon. Suggestions for better operating methods are considered and cash bonuses are paid for those which prove acceptable. And to keep it completely democratic, the minutes of each meeting are reprinted in the company house organ and distributed to every employee in the organization. Through their Advisory Board, the workers decided the basis upon which each individual's share of the profits should be calculated, so that everyone was satisfied . . . and why not? Eighty-five thousand dollars "ain't exactly hay" in any business.

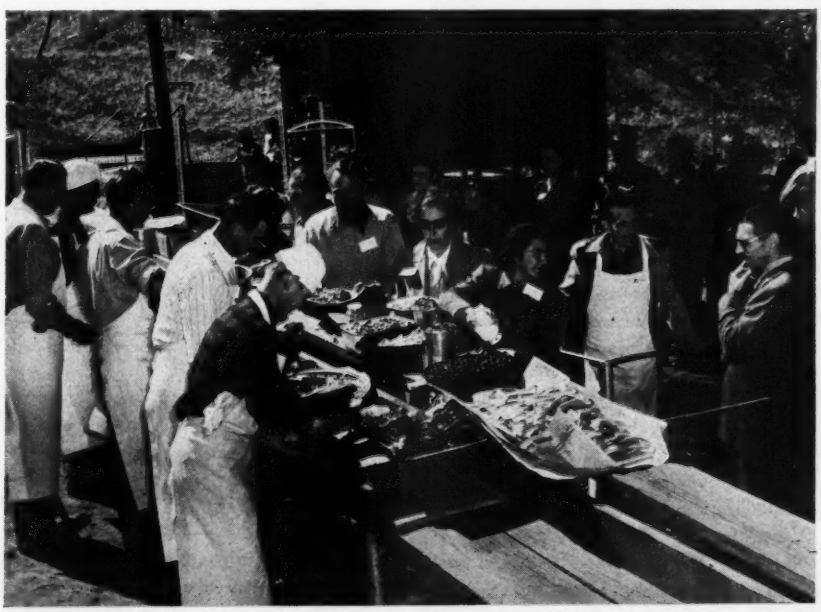
Credit for the wonderful time that everyone had at this event, was due to the four tool pushers, John Swain, Verne R. Coats, A. E. Kirkland, and W. G. Klassen, who took full responsibility for putting on the party. All these men were in charge of rigs at nearby Elk Hills, where Pike is drilling for Standard Oil—U. S. Navy.

There was an endless supply of beer and pop, with popsicles for the kids, a barbecue with 300 pounds of elk meat donated by Vice President H. G. Haney and Assistant Superintendent Harold Jordan, a ball-game between those from way up thar, and others from way down hyar. Plenty of other games too, for both grownups and kids, with prizes for all children who participated, whether they won or not. There were draw prizes of roasters for the wives, bicycles for boys and girls too, and even tricycles for the tots under six. It seemed as though Christmas had come a little early to the small fry.

During the day, Vice-Presidents S. I. Williams, H. G. Haney and Clyde Simpson were kept busy dealing out tickets for almost everything, under a system where "everything was for free"; but the small fry had to get mother's permission for refills after the first half dozen.

The big event of the day was of course the distribution of the profit-sharing checks by Vice-President Haney. After a brief word of thanks to all the employees for their splendid co-operation from President Thomas P. Pike, Mr. Haney took the mike and handed out the bonuses with appropriate comment on the record of each man who had qualified. The amount of the checks ranged from $140.92 to a high of $5,903.12, these amounts being based on the individual's contribution to the company operation during the year.

It is a significant commentary on the company's progressive management, that starting with a modest $4,500, eleven years ago, they can today show a net worth of over one million dollars. Pike believes that Incentive Management with Profit Sharing is the modern way to conduct a successful business.



President Tom Pike (right) was 'way over thar when the chow line started. He found Mrs. Pike at the head of the line with Vice-President Stanwood I. Williams and Mrs. Williams when he came sprinting up to the eats department. Here he is debating whether he should go back to the tail end of the line or just reach for something.

Personalities IN THE NEWS

Clark and Hill Advance At Eastman

Robert E. Clark, Jr., has been named general sales manager for the Eastman Oil Well Survey Company, with headquarters in the general office at Denver, Colorado. Robert C. Hill has been appointed Rocky Mountain-Mid-Continent division sales manager at Denver.

Robert E. Clark, Jr.

Mr. Clark's wide experience in sales promotion work in the oil industry, particularly in the Gulf and Pacific Coast areas, well qualifies him for his new position. A graduate of the University of California, where he majored in geology, he started his oil career in the drilling department of the Shell Oil Company at Ventura, and later became associated with the General Petroleum Corporation in Ventura and in Wyoming.

During World War II, Mr. Clark served 42 months with the Second Marine Division of the U.S.M.C. in the South and Central Pacific Theatres. His sales experience has been in the New England and New Jersey divisions of the Mexican Petroleum Corporation, the Emsco Asbestos Company at Downey, California, and the Brewster Company, Shreveport, Louisiana. Prior to joining the Eastman organization, Mr. Clark was president of the Graflube Bearing Company of Long Beach, California.

The Clarks, who have two children, will make their home in Denver.

Robert C. Hill

Mr. Hill, who joined the Eastman company in 1946, has been in charge of electronics sales and service at the Long Beach, California, office, and his new appointment is the result of his meritorious work done in that field.

A native of Denver, he is a graduate of the University of Colorado, with a B.A. degree in petroleum engineering and oil geology. Mr. Hill is married and has two children.

Eddie Stroud of Signal Oil & Gas Company announced that the lively oldsters, the Petroleum Production Pioneers, will hold their fifth anniversary roundup and annual meeting December 3 at the Rodger Young Auditorium, Los Angeles.

Officers and directors of the Nineteeners for the 1949-1950 term are as follows:

Charley Perkins, Big Shot; Bill Farrar, Hot Shot; Lev Sacre, Hook Shot; Dale Russell, Half Shot; Paul Huggins, Director at Large; Jay Perrin, Chairman Membership; Hal Lindquest, Chairman Tournament; Joe Aderhold, Chairman Rules and Handicap; Harold Davis, Chairman Prize and Trophy; Jim MacDonald, Chairman Publicity; Al Jensen, Chairman Entertainment (DeLuxe).

Hallan N. Marsh, General Petroleum Corporation production engineer, has been cited by the American Petroleum Institute "for distinguished service" at the Institute's annual meeting.

A certificate of appreciation was presented to Marsh by the Institute's Division of Production. He was one of seven men in the nation so honored.

Marsh's citation detailed his 21 years of service to the Institute's standardization program for oil field equipment. He is currently National Chairman of the Committee on Standardization of Pumping Equipment and Engines.

Marsh, who lives at 3319 Grand Avenue, Huntington Park, is a graduate of the California Institute of Technology. He has been with the General Petroleum Corporation since 1923.

Southern California Meter Association, December Meeting, Rio Hondo Country Club, Old River Road, Downey, Calif. Thursday, December 16, 1949, Dinner 6:30 P.M. Program 8:00 P.M.

Paper—**Past Presidents' Night**—Early history and accomplishments of S. C. M. A. by your past presidents. Added feature, **Screwy Inventions** by Mr. Will King of Electric Machinery Company.

General Baird H. Markham was named acting president of the American Petroleum Institute until March 1 next year at the recent meeting of the Institute in Chicago. Markham, 63, former commander of the Oklahoma National Guard, was selected on a temporary basis by the API board of directors to succeed William R. Boyd, Jr., of Teague, Texas, who has retired. The board named as its chairman for the coming fiscal year W. Alton Jones of Cities Service Corporation, New York. A director of the American Petroleum Industries Committee of New York, the new acting president of the institute will be paid on the basis of $75,000 a year. Markham was born in Decatur, Texas, but won most of his oil experience and fame in Oklahoma.

Leland I. Doan, president of Dow Chemical Company, urged American industry to tell its story to the public in an address before the Rotary International at the Los Angeles Biltmore. Doan said that industry has allowed "too many segments of our population to get the idea that capital is a bad thing and that corporate profits are either completely unwarranted or should be subject to Government control." The chemical executive reasoned the problem should be met on the local level by individual companies. Industry, he remarked, will be able to provide more products and more jobs "only so long as men with savings have an incentive to let us use these savings. They will have that incentive only so long as they have the right and hope to profit from our operations."

Outstanding among 75 Shell Oil Company Los Angeles district personnel, who recently received their 1948 safe driving awards, were 10 men with 16 or more years without a chargeable accident. They are H. H. Black, 16; T. Cannon, 16; E. P. Beedle, 18; J. C. Butts, 18; F. W. Deardorf, 20; F. C. Stark, 20; A. T. Meade, 19; R. C. Grunuzzi, 17; E. A. Mohr, 17, and C. E. Dandel, 19.

Left to right: R. C. Smith, general salesmanager of the H. C. Smith Oil Tool Co.; George Badger, president of the Farmington Supply Co., Edmonton, Alberta, Canada; and Paul Cunningham, branch manager, and Bob Dykes, sales and service, both with the Farmington Supply Co., which is the sole distributor of H. C. Smith rock bits in Canada.

A. H. Heller, geologist, engineer and owner of widely spread acreage in Cuyama Valley, has returned to Los Angeles from a vacation of three months in Europe. While across the water he visited Britain, France, Italy, Germany and Switzerland.

Earl V. Grover, Apex Steel Corporation, Los Angeles, was one of the three new directors of the American Institute of Steel Construction elected at the closing session of the Institute's annual meeting at White Sulphur Springs, W. Va.

J. D. Sterling, president of Eagle Oil & Refining Company, Los Angeles, has returned to his desk from a business trip to Chicago.

George M. Rankin, 61, director of lighting for the Southern California Edison Company, died of a heart attack at his home in Glendale.

Captain T. M. Peters, Standard of California marine superintendent at Los Angeles harbor, has left by Pan American Airways for Wake Island, where he will supervise restoration of broadside moorings. Hawaii Dredging Company will perform the work.

Mrs. Jennie Dimm, 75, wife of the late Luther Dimm, former vice president of Standard Oil Company, died in Los Angeles. She is survived by a son, Stanley Dimm, head of the foreign trade department in San Francisco for Standard, three sisters and one brother.

E. G. Bemis, Standard of California; H. D. Aggers, Union Oil; and R. Smith, Seaboard Oil; discussed treatment of oil wells to improve production at the meeting of the junior section of the Pacific petroleum chapter of the AIME. The meeting was held at the Rio Hondo Country Club, Downey.

Raymond W. Todd, chief engineer, Pacific Lighting Corporation, and Warren H. Kraft and F. H. Lacy, Jr., Honolulu Oil Corporation, were speakers at the meeting of the California Natural Gasoline Association at the Rio Hondo Golf Club.

Edward M. Loftus and Tom Young, widely known in oil and real estate circles, have opened a new tract a mile east of Norwalk.

The signing of the contract uniting Oil Base, Inc., Compton, California, and Core Laboratories, Inc., Dallas, Texas, in a joint marketing program brought together: (left to right) Thad Randolph, Sales Manager, Oil Base, Inc.; George Miller, President, Oil Base, Inc.; Bill Davison, President, Core Laboratories, Inc.

Core Lab to Represent Oil Base, Inc. in Midcontinent and Canada

Compton, California—Core Laboratories, Inc. of Dallas, will represent Black Magic oil drilling fluid, White Magic oil-emulsion mud and mud conditioning products manufactured by Oil Base, Inc. of this city. All territories east of California, including Canadian oil fields, will be serviced from Core Lab's 14 offices and 8 warehouses. Fields in California, Oregon, Washington and abroad will continue to be served by Oil Base, Inc. The joint announcement was made by Geo. Miller, president, Oil Base, Inc. and W. H. Davison, president Core Laboratories, Inc. effective November 1, 1949.

Having recently added diamond coring equipment to their derrickside services of drill cuttings analysis, core analysis and other engineering techniques, the 9 products, of Oil Base, Inc. now equips Core Lab with a complete mud service from spud-in to total depth. Oil Base men will work in close cooperation with Core Lab's 138 service engineers and will remain in their respective territories as consultants on the use of oil base products.

Kingman and Palmer Advance at Union

Kenneth E. Kingman has been appointed Manager of Manufacturing for Union Oil Company of California, W. L. Stewart, Jr., Executive Vice-President, announced recently. Elmer B. Palmer has been named to fill Mr. Kingman's former position as Manager of the Company's Los Angeles Refinery.

A graduate of the California Institute of Technology, Mr. Kingman joined Union Oil in 1929 as a research chemist at the Los Angeles Refinery. He became an engineer in the Development Department in 1933 and was named Assistant Superintendent of Operating and Treating in 1935. He was transferred to the Company's Oleum Refinery in 1937 as Assistant Superintendent of Lube Treating and became in succession Superintendent of Operations and Superintendent of Lube Oil, Compound and Shipping. In 1945, Mr. Kingman was appointed Manager of the Wilmington Refinery.

Mr. Palmer graduated in Chemistry from U. S. C. and in 1920 joined Union Oil as a laboratory inspector at the Los Angeles Refinery. In 1930, Mr. Palmer became Assistant Chemist in the Manufacturing Department. Following that, he was in succession Chief Chemist, Supervisor of Test and Control Laboratories, General Foreman of Laboratories, Assistant Superintendent of Operations, Superintendent of Operations, and early in 1949, was appointed Assistant Refinery Manager.

Only people who do things get criticized.

Physical Principles of Oil Production, by Muskat

Engineers and research workers in the drilling and production department of the petroleum industry will receive with interest the newly published *Physical Principles of Oil Production* by Dr. Morris Muskat. Director of Physics Division, Gulf Research & Development Company. This valuable text has been published by the McGraw-Hill Book Co., New York, as a part of the International Series in Pure and Applied Physics (922 pages $15.00).

The purpose of the book is to formulate and correlate present information concerning the physical principles and facts underlying the mechanics of oil production. A further purpose has been to stimulate and encourage additional research and study of the subject to fill in the many gaps in present knowledge; and to improve the correlation between laboratory theories and field observation.

The author's approach is new in that the book is neither wholly an empirical exposition nor a theoretical speculation; but consists in the detailed analysis of the physical concepts and principles which are developed as foundations for the interpretation and study of actual oil field performance. The theories of such ideal performances are developed fully, and their implications are illustrated graphically and numerically. Many examples from actual oil field operations demonstrate the basic characteristics of the various types of producing mechanism and operation.

Shaffer Hydraulic Cellar Control Gate

A hydraulic cellar control gate with two separate ram compartments unitized into one body with an overall height of less than 30 inches even in sizes as large as 13⅜ inches has been announced by the Shaffer Tool Works.

Ram-changes Simple

Each ram assembly is described as being readily accessible through a quick-opening side door hinged to the gate body. By unbolting the door and swinging it open, the ram assembly can be pulled out.

All moving parts in the hydraulic cylinder, including piston rod ram shafts, are described as being completely enclosed. No moving parts project from the gate, it is claimed. The locking shaft is stated to be completely enclosed and to stay enclosed in all positions because it is non-rising.

All operating parts in the hydraulic cylinders are explained to be either of stainless steel or manganese bronze. Although hydraulic oil is recommended as the operating fluid, water can be used without risk of corrosion.

Gate Size	7"		9"		10¾"		13⅜"	
Working Pressure (PSI)	3,000	5,000	3,000	5.000	3,000	5,000	3,000	5,000
Bore	7 1/16"		9"		11"		13⅝"	
A—Height.....inches	25	26½	25¼	27½	27½	30½	30	36¼
B—Width.....inches	28⅝	31½	31⅝	35¼	34¼	37⅝	40	40½
C—Length.....inches	70¾	70¾	71	72	79	81¼	88½	88½

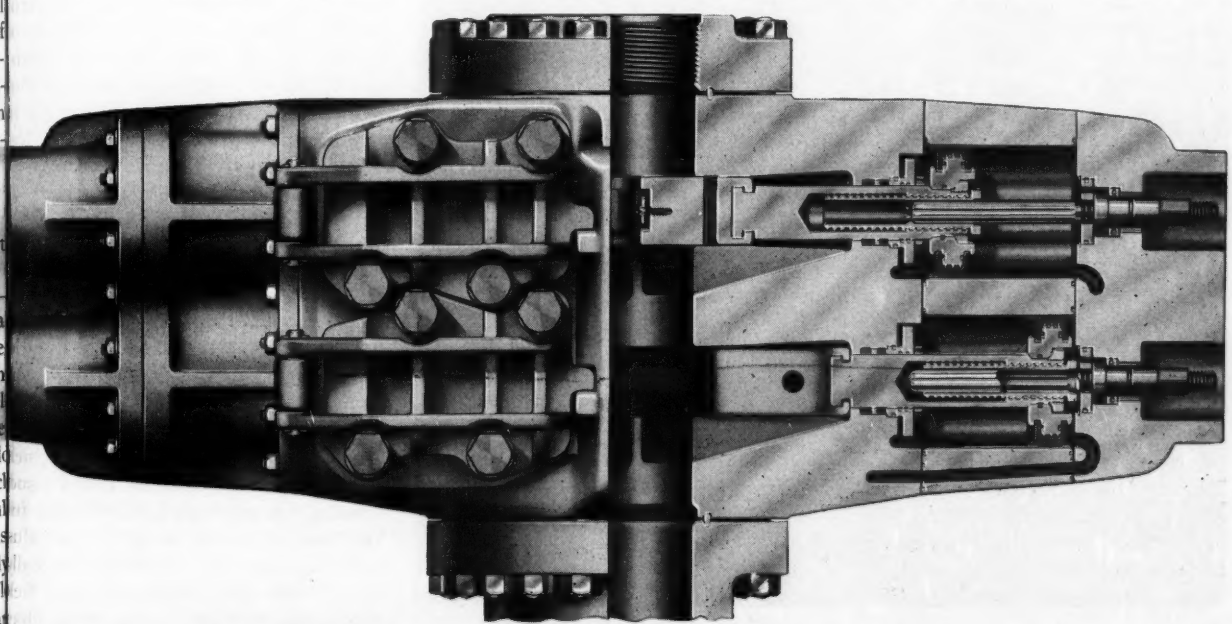
Shaffer Hydraulic Gate Dimensions

Ram Compartments Self-Draining

The rams travel, according to the manufacturer, on high narrow guide ribs raised above the steeply sloped bottoms of the ram compartments. No detrimental sand and mud accumulations can interfere with the operation of the rams because mud and sand drains back into the well from the gate body, it is claimed. Any that does remain, it is explained, is below the ram operating level and does not interfere with free ram travel, and therefore cannot keep the rams from closing and sealing. Ram rubbers and ram blocks are described as being interchangeable between the new control gate and the manually operated control gate.

New Tools for Valve Maintenance

To make valve maintenance easier, two new steel seat ring wrenches have been announced by The Lunkenheimer Company. Both are heat-treated alloy steel for maximum strength and wear. In use, the union bonnet ring of the valve acts as a guide, bearing against a



Newly developed Shaffer Hydraulic Cellar Control Gate has two separate ram compartments unitized into one body with an overall height of less than thirty inches, even in sizes as large as 13⅜ inches.

shoulder on the wrench, assuring firm engagement with the seat ring being removed or put in place.

The Fig. 1652 wrench has a threaded collar which provides for adjustment on different depth valves. It is designed primarily for Bronze "Renewo" and "Ferrenewo" Plug Type Valves and is available in sizes to fit valves from ¼" to 3".

The Fig. 1656 wrench is designed for "A.A.R." Plug Type Valves from ¼" to 2" inclusive. It is of one-piece construction.

For use with screw-over bonnet valves which do not have union bonnet rings, Lunkenheimer furnishes the Fig. 1653 bronze retaining ring to hold the wrench firmly in place.

The new wrenches are available through Lunkenheimer distributors. Fully described in Circular No. 579. A copy may be had on request to: The Lunkenheimer Company, Beekman and Waverly Aves., Cincinnati 14, Ohio.

Kaiser Ships Pipe to Louisiana

A trainload of line pipe manufactured in California was being delivered in Texas from a new source of supply for the expanding pipeline industry.

The 60-car train represents part of a large order of steel pipe purchased by Texas Eastern Transmission Corporation of Shreveport, Louisiana, from Kaiser Steel Corporation of Oakland, California. The single shipment contained enough 20-inch pipe for a 9-½ mile section of a line which the transmission firm is laying in Eastern Texas and Louisiana.

Jack L. Ashby, vice president and general manager of Kaiser Steel, described the shipment as "another example of the industrial transformation that is reshaping the economy of the West."

"Not so many years ago," he said, "buyers of line pipe looked only to the East and the South for their supply. Now, thanks to the development of western iron ore and coal resources, the West Coast becomes a major factor in the manufacturing of another important commodity for shipment eastward, reversing an established distribution pattern."

The pipe was fabricated by the steel division of the Basalt Rock Company at Napa, California, from plate rolled at Kaiser Steel's plant at Fontana, California. It was shipped under a fabrication-in-transit rate granted by the Southern Pacific and other western railroads which makes it possible for western producers to complete price-wise throughout the Southwest with eastern pipe mills.

This shipment was one of the first large orders received since Kaiser Steel and Basalt Rock Company recently announced their decision to work together in the production of large diameter steel line pipe.

The Napa plant is equipped with high-speed presses and other machinery, much of it designed by Basalt's own engineers, to produce high-quality pipe in lengths up to 40 feet and in diameters up to 30 inches. New machinery now being installed to turn out material in even larger diameters will be in operation early in 1950, Mr. Ashby said.

Kaiser Steel also supplying all the steel plate for the fabrication of pipe for the Transcontinental pipeline, which will carry gas from Texas to New York City, a distance of 1,840 miles. This is the longest pipeline project now under construction in the United States.

TIMES ARE CHANGING IN THE WEST, as evidenced by this trainload of steel pipe produced on the West Coast, bound for a pipeline project in the oil and gas fields of Louisiana and Texas.

Oil Well Manufacturing Corp. Issues New Catalog

A 20-page catalog containing a complete description of all the Red Devil products has recently been issued by Oil Well Manufacturing Corp., Los Angeles. The catalog will be mailed free of charge upon request.

It contains information on Red Devil valves and seats, valve seat pullers, "Dia-Hard" liners, liner pullers, piston rods of "Dia-Hard" steel, piston pullers, Tell-Tale liner packing and other Red Devil products in general use wherever drilling is in progress.

Tranquillity Wildcat Spuds

In the Tranquillity area of Fresno County, Havenstrite Oil Company has taken the first bit of ground with its Rawn No. 1 wildcat well on Sec. 23-16s-15e. Location is 175 ft. south and 660 east from a previous Texas Company explorer tagged California Cotton No. 36-23.

Formation of Elk Hills Volunteer Petroleum Reserve Training Group

Should another national emergency arise it would again be necessary to call Reserve Naval Personnel with petroleum experience to active duty. With this in mind the Navy, through the Commandant, Eleventh Naval District, Rear Admiral W. D. Baker, U.S.N., has activated a Naval Reserve Training Group to be composed of over 250 officers and men with duties comprising those of the ordinary oil field roustabout to top management. Only Naval Reserve personnel who have had the necessary oil field experience or experienced oil field personnel who join the Naval Reserve can qualify for assignment to this group. Members of this group will be tagged for possible mobilization assignment at Elk Hills.

Any interested Naval Reservist or civilian qualified in the development and production of the petroleum industry should contact the headquarters for this group:

INSPECTOR,
NAVAL PETROLEUM
RESERVES IN CALIFORNIA,
Room 402 U.S. Post Office and Court House, 312 North Spring Street,
Los Angeles 12, California.

Members of this group and members of the regularly established *Volunteer Petroleum Reserve Units will be Given Credit for Reserve Retirement Purposes for Attendance at Authorized Meetings Scheduled by This Group.* Further information on this group, its schedule of meetings, etc., will be disseminated to the Commanding Officers of all Volunteer Petroleum Reserve Units in Southern California by the Commandant, Eleventh Naval District.

Initially Captain Harry P. Stolz, S, USNR, who was in Command at Elk Hills for the Navy during the last war, will be assigned the mobilization command of this group with Commander Ray A. Hancock, USNR, as Executive Officer and Lieutenant Peter H. Gardett, USNR, as Personnel Officer. Captain Stolz is at present a consulting geologist of the firm of Stanley and Stolz.

Naval Petroleum Reserve No. 1, more familiarly known as Elk Hills, is located in the San Joaquin Valley thirty (30) some miles southwest of Bakersfield and fourteen (14) miles northeast of Taft. It is the only petroleum reserve within the continental limits of the United States containing a known and substantial quantity of oil. The Reserve saw great activity during the last war when over three hundred (300) oil wells were drilled and production increased from an original sixty-five hundred (6500) barrels a day to over seventy thousand (70,000) barrels a day as a mandate from the Congress after formal request from the Joint Chiefs of Staff.

The jurisdiction of the Navy over this Reserve stems directly from the Secretary of the Navy through the Director of Petroleum and Shale Reserves to the Inspector of Naval Petroleum Reserves in California. The present Director is Commodore Wm. G. Greenman, U.S. Navy, Retired.

Operations at Elk Hills are unique, since they constitute a partnership between the Navy and the Standard Oil Company of California. Standard is the fee owner of considerable land within the geological limits of the Reserve and joined with Navy under contract in what is known as *"Unit Operations-Naval Petroleum Reserve No. 1."*

Under terms of the contract the Navy has the right to undertake all or any phase of the operations, but selected the Standard Oil Company as operator since this company carries on the operations at cost; thus at considerable savings to the taxpayers.

During the last war it became necessary to augment the civilian operating personnel with personnel of the Navy, and at the time of V-J Day thirty-six (36) officers and two hundred twenty-five (225) enlisted men, practically all of whom had previous oil experience, were on duty.

Within ten days after V-J Day production was cut back to fifteen thousand (T5,000) barrels a day and subsequently to about sixty-five hundred (6500) barrels a day, so that the maximum quantity of oil could be preserved and stored in its natural reservoir until such time as another national emergency arose. Only such oil as is necessary to produce for testing and remedial purposes is presently produced, and the "Shallow Oil Zone" Wells are in a continued State of Readiness.

Considerable exploration and development work has been accomplished since the cessation of hostilities. At the present time seven (7) drilling rigs are at work day and night developing the deeper "Stevens Oil Zone." Congress appropriated nine million dollars for the work during the present year and requested the Navy to carry on a full measure of development to outline the various producing zones of the Field and to have all of the wells in a state of readiness to produce. At the present rate of peacetime development some engineers have estimated that ten to fifteen years will be required to complete the entire project.

More Canada

Another significant strike was made by Alberta Giant in a northern extension of the Redwater field, although further testing will be necessary to determine its importance to the area.

Contracts totaling more than $41,000,000 for supplies and construction have been let by Interprovincial Pipe Line, Ltd., for the 1,150-mile pipeline from Edmonton to Superior, Wis., it was announced in Edmonton by Lorne F. Kahle, executive vice-president of the firm.

"The problem of moving Alberta oil to new markets at low cost is so urgent that it is essential the pipe be in the ground by next fall," Kahle said. "We are getting on the job as quickly as possible."

Laying of 20-inch pipe on the 450-mile stretch from Edmonton to Regina will be in charge of the Canadian Bechtel Co., associated with Fred Mannix of Calgary.

The 340-mile Regina-Gretna section of 16-inch pipe will be laid by Williams Bros., who laid part of the Montreal-Portland pipeline and have built large gas lines in Alberta.

The 360-mile U. S. section of 18-inch pipe from Gretna to Superior will be laid by Anderson Bros.

Contracts have already been let for surveying and staking, aerial photos, excavating and grading, preliminary pump station work and other details. Total cost of laying the line, excluding materials, is estimated at $14,700,000. Kahle said contracts have been placed with Canadian manufacturers and contractors wherever possible.

California Oil World's Monthly Summary

CALIFORNIA DEVELOPMENT AND PRODUCTION

	SEPTEMBER, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed First 9 Months	Daily Average September 1949	Daily Average September 1948
SAN JOAQUIN VALLEY REGION						
Ant Hill					791	962
Antelope Hills					970	439
Bellevue					231	265
Belridge—North				2	3,179	2,732
Belridge—South	1	13	214	82	3,690	8,395
Blackwell's Corner					115	134
Buena Vista	1			9	34,352	43,337
Calder	2			2	215	
Canal					1,979	500
Coalinga Group						
Eastside				16	12,165	13,535
Oil City					78	73
Coalinga—Nose					44,707	52,878
Coalinga—Northeast					5,762	10,036
Guijarral Hills	6	8	5,604	36	10,931	191
Pleasant Valley				1	2,894	3,945
Jacalitos		1	225	8	5,715	4,753
Westside	1			21	4,632	6,726
Coles Levee—North		1	381	9	16,623	3,831
Coles Levee—South	1				2,657	291
Edison	2	4	462	40	10,283	11,070
Elk Hills	8	4	1,285	29	7,803	5,563
Fruitvale	2	4	1,152	15	7,980	6,805
Gosford, East	1	1	220	11	1,536	
Greeley				1	12,949	13,891
Helm					2,739	3,206
Kern Bluff		2	75	38	2,108	1,662
Kern Front				3	6,253	8,149
Kern River	1	3	47	50	8,544	8,925
Kettleman North Dome	1	2	110	4	31,044	34,444
Lanare					1,235	1,440
Lost Hills				6	5,956	6,541
McKittrick Group						
Belgian Anticline				3	1,322	1,162
Cymric				5	8,444	15,216
McKittrick					730	1,660
McKittrick Front					821	1,950
Salt Creek		1	125	2	4,051	5,836
Sheep Springs					678	603
Temblor Ranch				1	76	91
Midway-Sunset	2	5	155	63	31,310	35,943
Mt. Poso Group	1			8	11,483	10,247
Mountain View	3			7	3,302	3,250
Paloma	3			11	11,815	12,280
Poso Creek Group				1	1,930	3,174
Pyramid Hills					222	228
Race Track Hill				1	1,813	1,962
Raisin City	1			8	4,088	2,828
Rio Bravo					12,203	12,093
Riverdale					2,901	3,016
Round Mountain Group				4	6,272	5,642
Russell Ranch	4	1	742	72	22,712	742
South Cuyama Valley	8	7	6,214	28	4,556	
Strand					683	87
Strand—East					449	89
Tejon Ranch		1	475	3	2,147	2,810
Ten Section		1	615	4	6,802	1,879
Union Avenue					170	199
Wasco					301	149
Wheeler Ridge				6	782	242
Other Fields	3	3	164	37	2,511	1,266
TOTAL—San Joaquin Valley Region	52	62	18,265	647	394,690	379,363
COASTAL REGION						
Santa Maria District						
Barham Ranch (Los Alamos)						
Casmalia	2			3	272	1,123
Cat Canyon—East				1	109	643
Cat Canyon—West				18	12,223	9,694
Four Deer	1	1	100	2	439	893
Gato Ridge					2,875	2,194

	SEPTEMBER, 1949, DEVELOPMENT				PRODUCTION	
	Active Drilling Wells	Oil Wells Completed	Initial Production B/D	Oil Wells Completed First 9 Months	Daily Average September 1949	Daily Average September 1948
COASTAL REGION—Continued						
Guadalupe	.....	.....	.....	3	32	24
Lompoc	.....	.....	.....	.....	33	3,592
Olivera Canyon	.....	.....	.....	2	28	571
Orcutt	1	.....	.....	12	4,739	2,777
Santa Maria Valley	.....	.....	.....	4	13,705	13,309
Tinaquaic	.....	.....	.....	.....	6	68
Zaca Creek	.....	.....	.....	5	.....	359
Santa Barbara District						
Capitan	.....	.....	.....	.....	1,983	2,268
Coal Oil Point	.....	.....	.....	.....	.....	2
Elwood	.....	.....	.....	2	7,166	7,392
Santa Barbara	.....	.....	.....	.....	43	54
Summerland	.....	.....	.....	1	12	2
Ventura District						
Montalvo West	.....	.....	.....	3	684	365
Padre Canyon	1	.....	.....	9	7,309	3,663
Rincon	3	.....	.....	5	3,805	1,794
San Miguelito	3	.....	.....	8	6,984	649
Ventura Avenue	10	2	2,004	48	60,985	13,938
North Santa Clara Valley District						
Del Valle	2	.....	.....	16	8,870	9,457
Hopper Canyon	.....	.....	.....	.....	166	157
Oak Canyon	.....	.....	.....	.....	1,572	1,941
Ojai Group	2	.....	.....	11	455	247
Sespe Canyon Group	2	2	99	8	365	132
Temescal	.....	.....	.....	.....	524	553
Others	.....	.....	.....	3	76	76
South Santa Clara Valley District						
Aliso Canyon	.....	.....	.....	7	3,302	881
Bardsdale	4	1	305	10	1,716	1,014
Newhall-Potrero	1	2	1,062	11	9,255	7,628
Oxnard	.....	.....	.....	.....	576	1,148
Placerita Canyon	19	22	17,351	111	30,498	.....
Shiells Canyon	1	.....	.....	.....	791	352
South Mountain	5	2	300	24	7,347	4,121
West Mountain	.....	.....	.....	4	732	930
Others	.....	.....	.....	.....	630	1,122
Miscellaneous	1	1	101	37	607	867
TOTAL—Coastal Region	58	33	21,322	368	190,914	96,004
LOS ANGELES REGION						
Brea-Olinda	2	.....	.....	14	14,845	10,928
Coyote—East	3	1	70	10	4,064	3,973
Coyote—West	.....	1	52	16	12,478	14,987
Dominguez	.....	.....	.....	4	12,286	8,257
Dominguez, East	.....	1	480	1	18	3
Dominguez, Southeast	.....	.....	.....	3	337	125
East Los Angeles	1	1	509	3	1,189	542
El Segundo	.....	.....	.....	.....	347	323
Huntington Beach	6	6	1,065	72	54,538	56,970
Inglewood	1	.....	.....	18	13,665	11,065
Lawndale	.....	.....	.....	1	578	880
Long Beach	4	1	74	28	22,704	14,121
Montebello	2	1	11	8	6,334	6,213
Newport	.....	.....	.....	3	5,712	6,828
Playa Del Rey	.....	.....	.....	.....	1,651	1,780
Potrero	1	.....	.....	5	1,148	721
Richfield	.....	1	23	15	6,464	5,601
Rosecrans-Athens Group	2	3	618	15	6,480	4,130
Santa Fe Springs	3	.....	.....	2	14,456	12,620
Seal Beach	.....	.....	.....	7	12,244	8,538
Torrance	.....	.....	.....	5	7,507	7,498
Whittier	.....	.....	.....	1	537	912
Wilmington	8	15	3,525	121	111,049	112,642
Yorba Linda	.....	.....	.....	2	166	536
Other Fields	1	.....	.....	10	1,678	1,611
TOTAL—Los Angeles Region	34	31	6,427	364	312,475	291,804
EXPLORATORY						
Outpost Wells	37	.....	.....	.....	.....	.....
Wildcats	16	.....	.....	.....	.....	.....
Gas Wells	3	5	Gas	21	.....	.....
Abandoned Drilling Wells	.....	49	.....	451	.....	.....
TOTAL CALIFORNIA	200	180	46,014	1,851	898,079	767,171

THIS LAUGH OFF!

The average vacation is a succession of 2's—2 weeks that are 2 short, and then you are 2 tired 2 return 2 work and 2 broke not 2.

She: "I'm sorry I slapped you. I thought you were trying to steal my sorority pin."

He: "Why does a woman say she's been shopping when she didn't buy a thing?"

She: "For the same reason a man says he's been fishing."

Two can live as cheaply as one large family used to.

Breathes there a man with soul so dead,
Who hath not turned his head and said:
"Um-m-m-m-m-m-m, not bad!"

She: "Yes, I wrote a confession story once."

He: "Did they publish it?"

She: "No, but the editor came all the way from New York to see me."

At a Florida casino, a husband gave his wife, who had never played roulette, $200 to gamble. When she asked what number she should play, a friend suggested she choose her age number. She placed $100 on 28; the pill rolled around and landed in 32.

The gal promptly fainted.

A panhandler stopped a man on the street and asked for some money for something to eat.

The man said, "I'll tell you what I'll do, I'll buy you a drink."

"I don't drink," said the panhandler.

"Well," said the man, "I'll get you a couple of good stogies."

"I don't smoke," said the panhandler. "All I want is a little money for something to eat."

"I've got a good tip on a little pony in the fifth this afternoon," the man continued, "and I'll put up the money. You take the winnings —how about it?"

"But, sir, I don't gamble," protested the panhandler. "All I want is a little money for something to eat."

"All right," said the man, "I'll tell you what I'll do; I want you to come out to the house for dinner —I want my wife to meet you because I want her to see what happens to a man who does not smoke, does not drink, and does not gamble."

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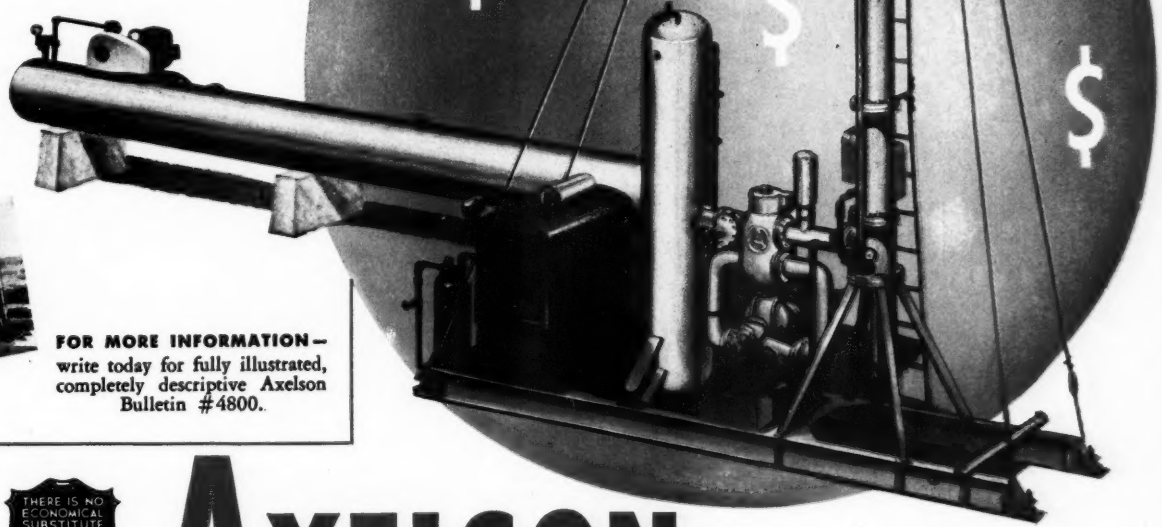

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Increased Stroke Length — up to 26½ feet total — reduces stroke loss due to rod and tubing stretch, increases plunger travel, decreases frictional wear, and assists in handling gassy fluids.

Fewer Stroke Cycles per Minute — from 3 to 6 spm — reduces rod string reversals, decreases impulse load factors and problems created by second and third order synchronous speeds, permits operator to increase pump size or depth or lighten the rod string.

Longer Sucker Rod Life — because operational characteristics of the Axelson Long Stroke Unit reduce peak stresses, stress range and cycle rate, and provide cushioned power applications, thus effecting savings by eliminating down-time.

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